DEVELOPMENT OF A DISASTER RESPONSE PLAN FOR THE NORTH CAROLINA NATIONAL ESTUARINE RESEARCH RESERVE

by

Caitlin Adams, Allison Hensch, and Dana Rollison

Dr. Lisa Campbell, Adviser

24 April 2015

Masters project submitted in partial fulfillment of the

requirements for the Master of Environmental Management degree in

the Nicholas School of the Environment of

Duke University

Executive Summary

DEVELOPMENT OF A DISASTER RESPONSE PLAN FOR THE NORTH CAROLINA NATIONAL ESTUARINE RESEARCH RESERVE

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The North Carolina National Estuarine Research Reserve (NCNERR) is one of 28 reserves within the National Estuarine Research Reserve System. The NERR system was created by the Coastal Zone Management Act of 1972 for long-term research, education, and stewardship. This partnership between the National Oceanic and Atmospheric Administration (NOAA) and the coastal states protects over one million acres of estuarine land and water, provides essential habitat for wildlife, offers educational opportunities for students, teachers, and the public, and serves as a living laboratory for scientists. In North Carolina, the reserve is a cooperative program between NOAA and the North Carolina Division of Coastal Management (NCDCM), a division of the North Carolina Department of Environment and Natural Resources (NCDENR). The North Carolina National Estuarine Research Reserve includes Currituck Banks, Rachel Carson, Masonboro Island, and Zeke's Island. This project focuses on the creation of a Disaster Response Plan (DRP) for these four sites.

Following the Deepwater Horizon oil spill in 2010, the five Gulf of Mexico NERRs worked with the NOAA Office of Response and Restoration and the consulting firm TetraTech to develop DRPs for each Reserve as well as a DRP template for use throughout the NERR system. We were tasked by our client to develop a NCNERR DRP by adapting the template to North Carolina's needs through local, county, state, and federal stakeholder input. The purpose of this DRP is to guide emergency management efforts of NCNERR, build relationships between NCNERR sites, national sites, and local stakeholders, and position NCNERR as a partner supporting area response efforts. Lack of reserve emergency management capabilities and a need for increased awareness of the reserve sites led to NCNERR sites and managers prioritizing pre-planning and collaboration with local emergency management stakeholders.

We initiated the project by interviewing Gulf managers about the DRP development process, including adapting the template and facilitating regional stakeholder workshops. Relevant local stakeholders were invited to workshops in Beaufort, Wilmington, and Corolla in an effort to garner insight on the potential hazards affecting the reserve and establish communication pathways between reserve staff and local emergency management professionals. Receiving feedback on the Hazard Identification Risk

Assessment (HIRA) tool, completed by site managers prior to the workshop, was a major focus of these workshops. The HIRA tool categorizes hazards based on the probability of their occurrence and the level of impact they may have to life, health, property, the environment, and the local economy. The sessions returned a wide variety of responses by a multitude of emergency management professionals, and their input was incorporated into the final written DRP. These workshops jump-started conversations between Reserve staff and emergency management professionals, provided opportunities to integrate reserve staff into local emergency management efforts and trainings, and raised awareness of activities occurring on reserve property previously unknown to site managers.

We distilled all information acquired from our independent research and stakeholder workshops into the DRP base plan and appendices. The DRP begins with a description of purpose and scope and an acknowledgment of all relevant support, plans, and authorities in NCNERR emergency response. The plan goes on to describe the resources at risk on each site, the hazards facing these resources, and the current capabilities of reserve sites. We then discuss mitigation, preparedness, response, and recovery efforts in the concept of operations, before addressing the continuity of operations and plan maintenance. The DRP also contains a wealth of appendices including: emergency contact and planning stakeholder lists for each reserve location, standard operating procedures for all hazards identified as high or medium risk to reserve sites, and training recommendations and options available to reserve staff.

This plan will play an essential role in the disaster response efforts of the four NCNERR components. It allows NCNERR staff to be more conscientious regarding disaster planning and response and will help area emergency responders to be more aware of reserve resources and capabilities — establishing relationships and communication networks critical to protecting staff, visitors, and the environment and economic resources of the reserve.

Approved

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April 23, 2015
Date

Lisa Campbell
Dr. (MP Adviser Name printed)

Master's Project submitted in partial fulfillment of the requirements for the Master of Environmental Management degree in the Nicholas School of the Environment, Duke University.

North Carolina
National Estuarine Research Reserve
Disaster Response Plan

April 2015

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This Disaster Response Plan was developed using the Disaster Response Plan template and five Disaster Response Plans for the Gulf of Mexico National Estuarine Research Reserves. Funding to develop the template and the Gulf Disaster Response Plans was provided by the NOAA's Office of Response and Restoration, Gulf of Mexico Disaster Response Center through a cooperative agreement between the NOAA's Office of Ocean and Coastal Resource Management under NOAA Grant NA10NOS420007 and the Mississippi Department of Marine Resources Grant #12-038.

The North Carolina NERR Disaster Response Plan was prepared by a team of Master's students from the Nicholas School of the Environment at Duke University.

This Disaster Response Plan (DRP) was developed for the North Carolina National Estuarine Research Reserve (Reserve, NCNERR) by a team of Master's students from the Nicholas School of the Environment at Duke University, in conjunction with Reserve staff and with input from a variety of other entities, for several purposes. First, the DRP will help the Reserve be better prepared for both natural and man-made disasters in North Carolina. The Reserve has a hurricane preparedness plan, but does not have specific plans to prevent or respond to other types of disasters. Recent disasters in regions outside of North Carolina (e.g., Deepwater Horizon, Superstorm Sandy) demonstrated the vulnerability of the Reserve to events outside our boundaries and illustrated the importance of preparedness. The Reserve has working relationships with local, state, and federal agencies involved with emergency response, but additional coordination and communication are necessary. The second reason for this plan is to identify and establish relationships with additional stakeholders, partners, and other local, state, and federal entities that could or should be involved in disaster response, clean-up, or restoration activities. Many groups with expertise and authority to respond to disasters can work together to achieve a more rapid and effective response. By making contacts and developing protocols prior to an event, we can minimize damage to property, and injury to natural resources during and after a disaster.

The Reserve's primary mission is to protect natural resources. Active stewardship of resources includes planning ahead to minimize hazards and avert disaster. The Reserve wants to be better prepared to take immediate action when an emergency occurs, to share its capabilities when warranted, and to cooperate with primary responders in area response efforts. The Reserve aims to learn from the collective experience of emergency response teams as we work together to train and practice effective preparedness and emergency response at the North Carolina NERR.

Rebecca Ellin, North Carolina NERR Manager

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Plan Acknowledgements and Distribution

The following stakeholder agencies and organizations contributed to development of this plan and/or represent the various relationships and collaboration necessary to maintain disaster preparedness. Each organization listed has received a copy of this plan and is welcome to both lend and request support which may become necessary for the protection of life, health, property, the environment, and the economy in and around the North Carolina National Estuarine Research Reserve (NCNERR).

National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management

NOAA, Office of Response and Restoration

NOAA, National Weather Service

United States Coast Guard (USCG), Sector North Carolina

United States Environmental Protection Agency (EPA)

United States Army Corps of Engineers (USACE)

North Carolina Department of Public Safety

North Carolina Department of Environment and Natural Resources

North Carolina Division of Coastal Management

North Carolina Wildlife Resources Commission

North Carolina Division of Water Resources

North Carolina Division of Marine Fisheries

North Carolina Forest Service

Currituck County Department of Emergency Management

Currituck County Regional Airport

Currituck County Department of Fire Protection

Carteret County Department of Emergency Services

New Hanover County Department of Emergency Management

Brunswick County Department of Emergency Services

Carteret County Pest Management Division

Town of Beaufort, NC

Duke University Marine Laboratory

TowBoat U.S., Beaufort, NC

The Nature Conservancy

Brunswick Nuclear Power Plant

Rachel Carson Local Advisory Committee

Currituck Banks Local Advisory Committee

Masonboro Island Local Advisory Committee

Zeke's Island Local Advisory Committee

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Record of Changes

The following is a record of changes to this plan. This plan includes a base plan and appendices. Changes to the base plan and list of appendices will be recorded here. Changes to specific appendices will occur more often (e.g., updates to contact information) and will not affect overall disaster response policy, so they will not be recorded here. However, as people responsible for maintaining appendices make those changes, each change will be relayed to the appropriate stakeholder agencies.

Each stakeholder organization listed on the Plan Acknowledgements and Distribution page receives a copy of the plan and plan revisions.

Date	Description of Change	Page or Section

Acronyms and Abbreviations

AAR	After Action Report
ACP	Area Contingency Plan
CDMO	Centralized Data Management Office
CFR	*Code of Federal Regulations*
COOP	Continuity of operations plan
CPR	Cardiopulmonary resuscitation
CZMA	Coastal Zone Management Act
DOI	United States Department of the Interior
DRP	Disaster Response Plan
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPA	U.S United States Environmental Protection Agency
ESI	Environmental Sensitivity Index
ET	Emergency Team
FEMA	Federal Emergency Management Agency
FWS	U.S. Fish and Wildlife Service
GIS	Geographic Information System
GRPs	Geographic Response Plans
HAB	Harmful Algal Bloom
HazMat	Hazardous Material
HIRA	Hazard Identification and Risk Assessment
HSEEP	Homeland Security Exercise and Evaluation Program
IAP	Incident Action Plan
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
LEPC	Local Emergency Planning Committee
NCCR	North Carolina Coastal Reserve
NCDCM	North Carolina Division of Coastal Management
NCDENR	North Carolina Department of Environment and Natural Resources
NCDMF	North Carolina Division of Marine Fisheries
NCDPS	North Carolina Department of Public Safety

NCNERR	North Carolina National Estuarine Research Reserve
NCWRC	North Carolina Wildlife Resources Commission
NERR	National Estuarine Research Reserve
NERRS	National Estuarine Research Reserve System
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NRDA	Natural Resource Damage Assessment
NRF	National Response Framework
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
OCM	Office for Coastal Management (NOAA)
PDA	Preliminary Damage Assessment
PIO	Public Information Officer
SET	Surface Elevation Table
SOP	Standard Operating Procedures
SWMP	System-wide Monitoring Program
TBD	To Be Determined
TIPS	Tidal Inlet Protection Strategies
UC	Unified Command
USACE	United States Army Corps of Engineers
U.S.C.	*United States Code*
USCG	United States Coast Guard
UXO	Unexploded ordnance
VHF	Very High Frequency

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1.0 Introduction

The North Carolina National Estuarine Research Reserve (NCNERR) is a 4-component Reserve with sites located in in Currituck, Carteret, New Hanover, and Brunswick Counties, NC and is part of the National Estuarine Research Reserve System (NERRS). The NERRS is a network of 28 federally designated sites where natural resources are managed, protected, monitored, and studied, in an effort to gather information to be shared with the public. The system was created by the federal Coastal Zone Management Act (CZMA) of 1972 and codified as Title 15, Code of Federal Regulations (CFR). The National Oceanic and Atmospheric Administration (NOAA) provides partial funding, program guidance, and technical assistance to maintain the system. Each NERR is managed by a state partner with input from local stakeholders.

As identified at 15 CFR Part 921.1(b), five goals have been defined for NERRs:

1. Ensure a stable environment for research through long-term protection of NERR resources.
2. Address coastal management issues identified as significant through coordinated estuarine research within the System.
3. Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation.
4. Promote federal, state, public, and private use of one or more Reserves within the System when such entities conduct estuarine research.
5. Conduct and coordinate estuarine research within the System, gathering and making available information necessary for improved understanding and management of estuarine areas (NOAA 2012a).

The NCNERR is part of the NC Division of Coastal Management (DCM). The NCNERR's vision is as follows:

Healthy estuaries and coastal watersheds where ecological communities thrive and the human community benefits in North Carolina.

The NCNERR mission aligning with the above vision is as follows:

To promote informed management and stewardship of North Carolina's estuarine and coastal habitats through research, education, and example.

To achieve this vision and mission, the NCNERR identified the following five strategic goals (NCNERR 2009):

1. Humans understand the natural systems, their connections to them, and the benefits derived from them.

2. Applicable research informs coastal policy.

3. NCNERR habitats and land use of associated watersheds are characterized and connections understood.

4. Habitat is protected and the public has directed access to Reserve sites.

5. NCNERR operations, infrastructure, and stature are improved.

The NCNERR is one of several reserves in the NERR System that is a multi-component Reserve, with four sites spanning the North Carolina coast. These sites are as follows: Currituck Banks, Rachel Carson, Masonboro Island, and Zeke's Island Reserves. While the mission and goals apply to all four Reserve components, each component faces unique challenges and will be discussed independently where needed throughout the plan.

Federal regulations require each NERR to prepare and maintain a NOAA-approved management plan. The plan must describe the NERR's strategies and actions for research, education/interpretation, public access, construction, acquisition and resource preservation, restoration, and manipulation. Staff roles in each of these areas must also be defined. The North Carolina NERR Management Plan and additional information on the Reserve are available at: http://www.nccoastalreserve.net/web/crp/management-plans. Effectively managing emergencies is important to protecting natural resources and continuing the work of each NERR. This plan addresses NCNERR emergency management.

1.1 Purpose

North Carolina NERR has developed this DRP to guide internal response actions and coordinate response actions with partner agencies during disaster response operations. The DRP provides a flexible framework for response and operational guidance to help protect the Reserve area ecosystems and ensure the health and safety of all involved parties. This DRP fulfills the following objectives:

- Describes the resources at risk at the Reserve (people, infrastructure, and natural resources)
- Provides policy and guidance for operations, specifically detailing capabilities

- Presents a concept of operations, and actions, roles, and responsibilities involved with incident management
- Supports effective use of government resources during response operations

This DRP focuses on actions to prepare for potential future disaster events, as well as appropriate response actions following confirmation of a disaster and request for response assistance: It provides general information regarding the major components of any response effort, and presents specific procedures for general and hazard-specific response (Appendices A and D). While it touches on all phases of emergency management, its primary focus does not include issues associated with prevention, post-response recovery, or reporting.

1.2 List of Plans

Federal regulations require each NERR to prepare and maintain a NOAA-approved management plan. The management plan must describe the Reserve's strategies and actions for research, education/interpretation, public access, construction, acquisition, and resource preservation, restoration, and manipulation. Staff roles in each of these areas are described in the management plan (NCNERR 2016).

This DRP complements the Reserve's Management Plan by describing the policies, capabilities, and activities necessary for Reserve staff to respond to both internal and external emergencies. This DRP is not intended to supplant existing plans or policies; it strengthens Reserve-specific preparedness for future events and supports sharing capabilities for natural resource protection within the existing emergency management framework. This DRP may also serve as a Reserve-specific annex to the plans of local, state, and federal response agencies, if they choose to incorporate it. Area plans supporting emergency management in the area of the Reserve, including those specific to a single Reserve component, are listed below:

- U.S. Coast Guard Area Contingency Plan Sector North Carolina
- North Carolina Emergency Operations Plan (NCDPS 2012)
- North Carolina State Hazard Mitigation Plan (NCDPS 2013)
- North Carolina Division of Coastal Management Disaster Response Plan and Procedures Manual

Currituck Banks Reserve

- Currituck County Emergency Operations Plan (2009)

- Currituck County Hazard Mitigation Plan (2011)

Rachel Carson Reserve

- Carteret County Emergency Operations Plan (CCDES 2014)
- Pamlico Sound Regional Hazard Mitigation Plan (2015)

Masonboro Island Reserve

- New Hanover County Emergency Operations Plan (2010)
- New Hanover County Hazard Mitigation Plan (2010)

Zeke's Island Reserve

- Brunswick County Emergency Operations Plan (2014)
- Brunswick County Hazard Mitigation Plan (2011)

Copies of these plans can be accessed at the NCNERR Headquarters.

1.3 NERR Emergency Management

NERRs are exposed to many of the same hazards that threaten the developed built and natural environment in urban, suburban, and rural areas. Emergency planning and other preparedness activities can help reduce negative impacts from hazard events and can enhance NERR resilience.

Unlike other jurisdictions responsible for managing emergencies, NCNERR does not have the authority, nor does it maintain staff dedicated to, emergency management, law enforcement, fire suppression, emergency medical, or other public health and safety-related services. NCNERR wholly depends on other agencies to conduct emergency response. However, NCNERR can add efficacy to local response and better ensure the protection of Reserve natural resources and infrastructure by contributing to emergency preparedness in the following ways: maintaining this DRP with the support of stakeholders, training staff, and conducting exercises. Through this plan, NCNERR endeavors to make disaster preparedness an interest and shared responsibility of all NCNERR staff and management partners.

1.4 North Carolina NERR Basic Information

Coastal North Carolina is unique in that it includes both the Virginian and Carolinian biogeographic regions as well as the three regions of the N.C. Coastal Plain. The

NCNERR was established as a multi-component Reserve to take advantage of this unique biogeography and is comprised of four geographically disparate components representing diverse estuarine habitats. This information is described in more detail in NCNERR's Management Plan and Site Profile. Table 1 provides a summary of information about the Reserve and Figure 1 provides a map of NCNERR's component sites.

Currituck Banks Reserve

The Currituck Banks component is included in the NCNERR because it is an excellent example of an undisturbed cross-section of a barrier island in a low-salinity estuarine system. The Currituck Banks component is the only component in the Virginian biogeographic province. The 965-acre site in the northeastern corner of North Carolina in Currituck County is the northern most component, located just north of the unincorporated village of Corolla. It is bounded to the north by The Nature Conservancy and U.S. Fish and Wildlife Service properties, the east by the Atlantic Ocean, the west by Currituck Sound, and the south by private subdivisions of Corolla. Figure 2 provides a map of the Currituck Banks Reserve.

Rachel Carson Reserve

The Rachel Carson component represents an exceptional part of the Carteret County area and the Central coastal plain region. The Rachel Carson site consists of 2,315 acres of small islands, including Carrot Island, Town Marsh, Bird Shoal, Horse Island, and Middle Marsh, as well as salt marshes and intertidal and subtidal flats. Rachel Carson is bounded to the north by Taylor's Creek and the Town of Beaufort, to the east by Back Sound, to the south by the Cape Lookout National Seashore, and to the west by Pivers and Radio Islands. Figure 3 provides a map of the Rachel Carson Reserve.

Masonboro Island Reserve

Located in New Hanover County, the Masonboro Island Reserve includes an 8.5 barrier island, adjacent dredge spoils, and surrounding sound and marsh. The Masonboro Island Reserve is bounded on the west by the Intracoastal Waterway, to the north by Shin Creek and Masonboro Inlet, to the east by the Atlantic Ocean, and to the south by Carolina Beach Inlet. It is located in New Hanover County between the municipalities of Wrightsville Beach and Carolina Beach. 5653 acres are protected within the boundary of the site. Figure 4 provides a map of the Masonboro Island Reserve.

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Zeke's Island Reserve

Zeke's Island is located within both New Hanover and Brunswick counties, and includes 1635 acres of protected land. Zeke's Island is bounded on the west by the Cape Fear River, to the north by the Fort Fisher Recreation Area, to the east by the Atlantic Ocean, and to the south by the Bald Head Island State Natural Area. Shoals and marshes continuously appear and disappear within the Basin, and shorelines of the more stable islands periodically accrete and erode. Scattered dune systems can be found on North Island, and Zeke's Island and No Name Island have elevations of only a few feet. This unique environment provides a variety of other habitats within the site, utilized by fish, bird, and reptile species. Figure 5 provides a map of the Zeke's Island Reserve.

Table 1 - Summary Information for the NCNERR

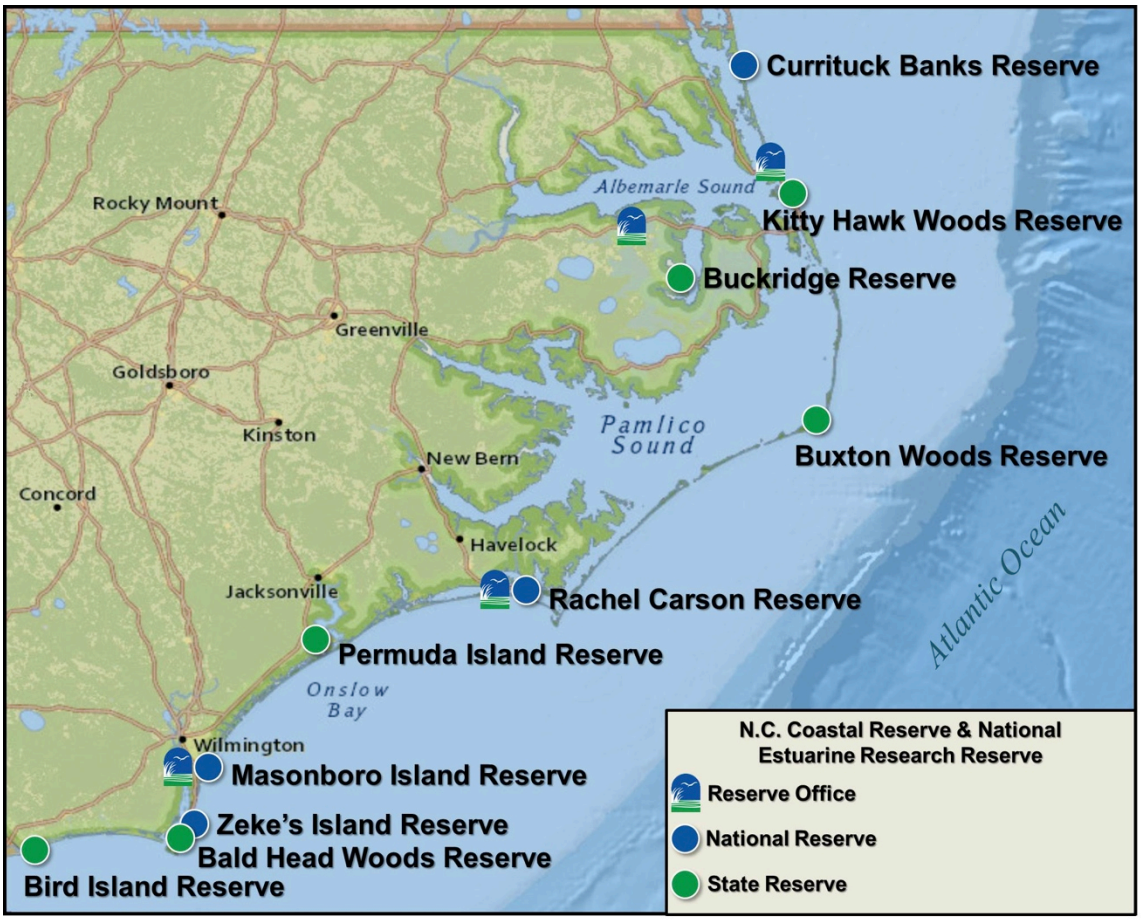
Category	Information
Mailing Address:	**Currituck Banks:** 983 West Kitty Hawk Road, Kitty Hawk, NC 27949 **Rachel Carson:** NCNERR Headquarters Office, 101 Pivers Island Road, Beaufort, NC 28516 **Masonboro Island:** UNCW Center for Marine Science, 5600 Marvin K Moss Lane, Wilmington, NC, 28509 **Zeke's Island:** UNCW Center for Marine Science, 5600 Marvin K Moss Lane, Wilmington, NC, 28509
Acres:	**Currituck Banks:** 965 acres **Rachel Carson:** 2,315 acres **Masonboro Island:** 5,653 acres **Zeke's Island:** 1,635 acres
Summary Description:	**Currituck Banks:** The 965 acre site is the northern most component, located in Currituck County just north of the unincorporated village of Corolla. Extensive mud and sand flats, submerged aquatic vegetation, ocean beaches, upland dunes, shrub thickets, maritime forests, and interdune ponds comprise the buffer communities of the site. The mixing of the warm Gulf Stream current and the cool Labrador Current off Currituck Banks creates a climate where both northern and southern species are found. **Rachel Carson:** Salt marshes, seagrasses, subtidal/intertidal flats, and maritime forest are all important habitat types found on the site. Salt marsh and tidal flats are important nursery areas for estuarine species. The shrubbery thicket on Middle Marsh is both a heron and egret rookery. Over 200 species of birds have been observed at the site, as it is along the Atlantic Migratory Flyway. **Masonboro Island:** With 5,653 acres protected, Masonboro Island is the largest site of NCNERR. It is located in the most populous area of North Carolina, approximately five miles southeast of Wilmington in New Hanover County. Habitats found at the site include subtidal soft bottoms, tidal flats, hard surfaces, salt marshes, shrub thicket, maritime forest, grasslands, open beach, and sand dunes. Loggerhead and green sea turtle s, as well as seabeach amaranth are found in the site and are listed as threatened by the federal government. A variety of other fish, bird, and reptile species can be found at the Masonboro site.

	Zeke's Island: The site is located in the Cape Fear River basin, and includes 1,635 acres of protected area. The site falls within the boundaries of both New Hanover and Brunswick counties. A variety of habitats can be found in the site, including tidal flats, salt marshes, shrub thicket, maritime foest, sand dunes, ocean beach, and rock surface. Nesting by Atlantic loggerhead and gren sea turtles often occurs on beaches, and the surrounding intertidal flats serve as the single most important shorebird habitat in southeastern North Carolina.
Primary Managing Entity:	NCNERR is administed through the North Carolina Coastal Reserve of the North Carolina Division of Coastal Management, whose headquarter offices are at the above mailing address.
Stakeholders with Ownership or Land Management Responsibilities:	The NCNERR is a federal-state partnership between NOAA and the North Carolina Department of Environment and Natural Resources' Division of Coastal Management (NCDCM). Administration responsibilities are managed collaboratively with NOAA, DCM, the University of North Carolina at Wilmington, Local Advisory Committees, and additional partners relevant to activities within the Reserve, such as N.C. Division of Water Resources, the National Park Service, and the United States Geological Survey.
County or Counties:	**Currituck Banks:** Currituck County **Rachel Carson:** Carteret County **Masonboro Island:** New Hanover County **Zeke's Island:** New Hanover County and Brunswick County
Disater Response Plan Point of Contact:	**All components:** Rebecca Ellin, Program Manager: rebecca.ellin@ncdenr.gov; phone: 910-665-9757 **Currituck Banks:** Scott Crocker, Northern Sites Manager: scott.crocker@ncdenr.gov; phone: 252-261-8891 **Rachel Carson:** Paula Gillikin, Central Sites Manager: paula.gillikin@ncdenr.gov; phone: 252-838-0886 **Masonboro Island:** Hope Sutton, Southern Sites Manager: suttonh@uncw.edu; phone: 910-962-2998 **Zeke's Island:** Hope Sutton, Southern Sites Manager: suttonh@uncw.edu; phone: 910-962-2998
Primary Access:	**Currituck Banks:** Currituck Banks is accessible by foot traffic and boat. The nearest boat ramp is located next to the Currituck Lighthouse in Corolla. The ocean beach portion of the Reserve is accessible by four-wheel drive along the beach corridor after N.C. 12 terminates at the beach access ramp. Two walking trails exist at the southern portion of the site just off state route N.C. 12 where public parking and handicap access is available. **Rachel Carson:** Rachel Carson is accessible only by boat. Ferry services operate in the Town of Beaufort and bring visitors to the western end of the Reserve. Privately owned boats, kayaks, or other transport may access any portion of the Reserve. A boardwalk on the eastern end of Carrot Island is directly across from a public N.C. Wildlife Resources Commmission boat ramp. Two nature trails with interpretive signs can be reached at the northwest beach on Town Marsh. **Masonboro Island:** Masonboro Island is accessible only by boat, with public and private boat ramps in and near Wrightsville Beach and Carolina Beach. Private fee ferry services also provide transporation to the site. Boats usually land on the beaches along the north and south sound side of the island, and trails provide access from the sound to the beach side. **Zeke's Island:** U.S. 421 from Wilmington ends just north of the Zeke's Isalnd site.

	The N.C. Wildlife Resources Commission maintains a public boat ramps at the northern shore of the Basin, and the New Hanover County Parks and Recreation Department maintains a pedestrian beach access facility and vehicular dune crossover on Federal Point. Primary access is by private boat, with access to the barrier spit by foor or offroad vehicle.

Sources: NCNERR web site and NCNERR Management Plan (NCNERR, 2009).

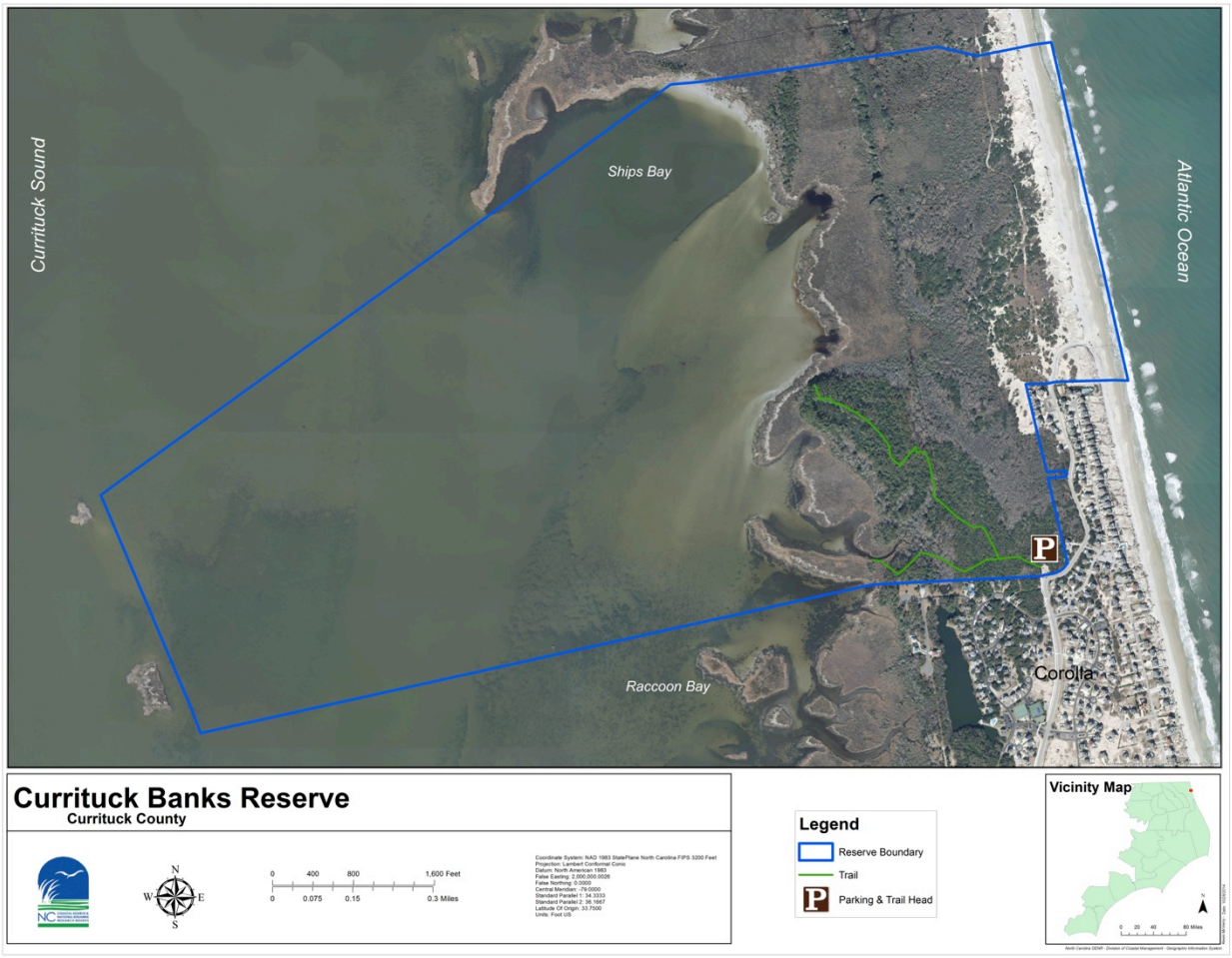
Figure 1 – Map of NCNERR



Sources: NCNERR Headquarters Office.

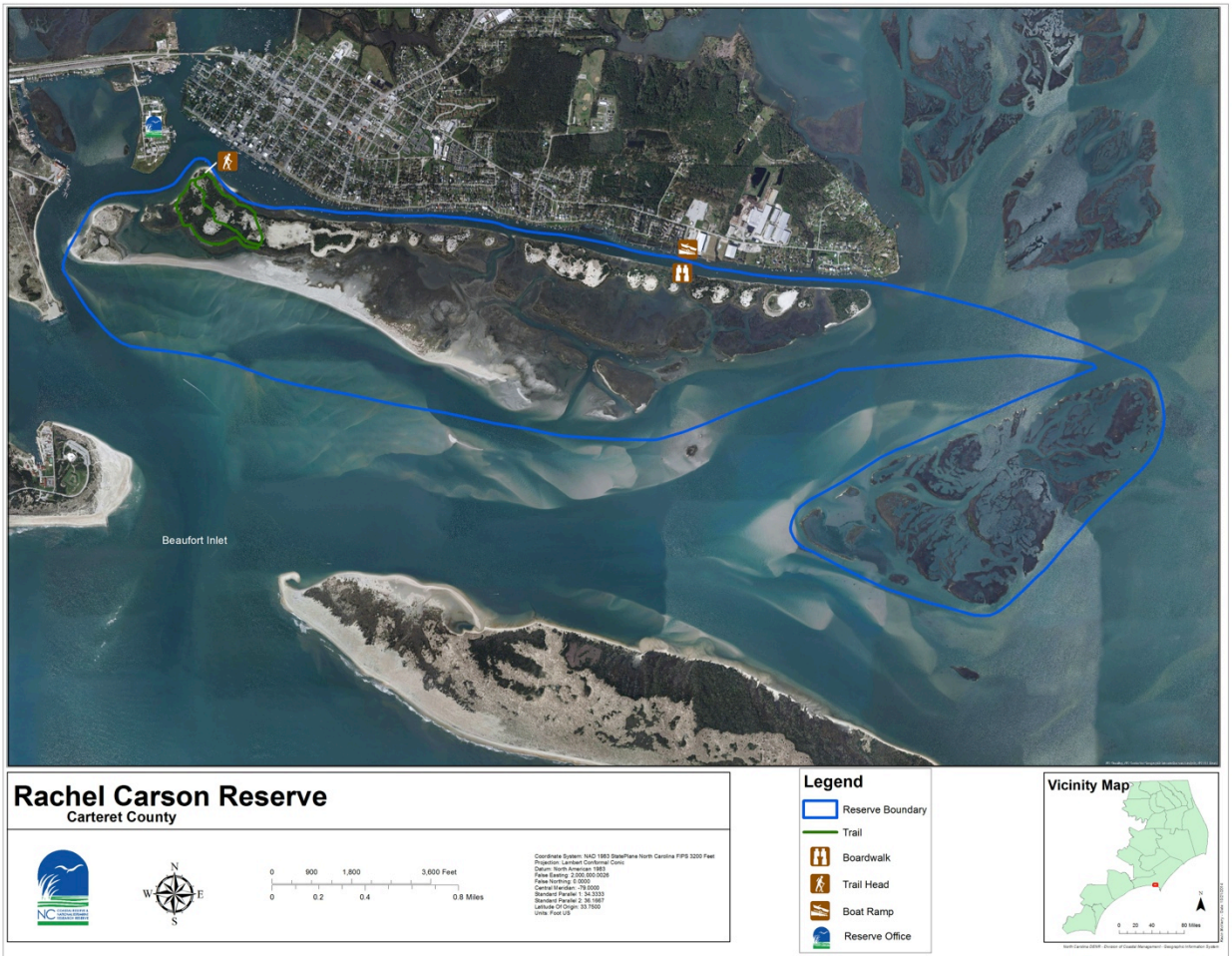
The NCNERR is managed as part of the umbrella program, the North Carolina Coastal Reserve (NCCR), within the NCDCM. The NCCR comprises 10 sites across the state; the four NCNERR components are represented in blue.

Figure 2 – Location map of Currituck Banks Reserve



Sources: NCNERR Headquarters Office.

Figure 3 – Location map of Rachel Carson Reserve

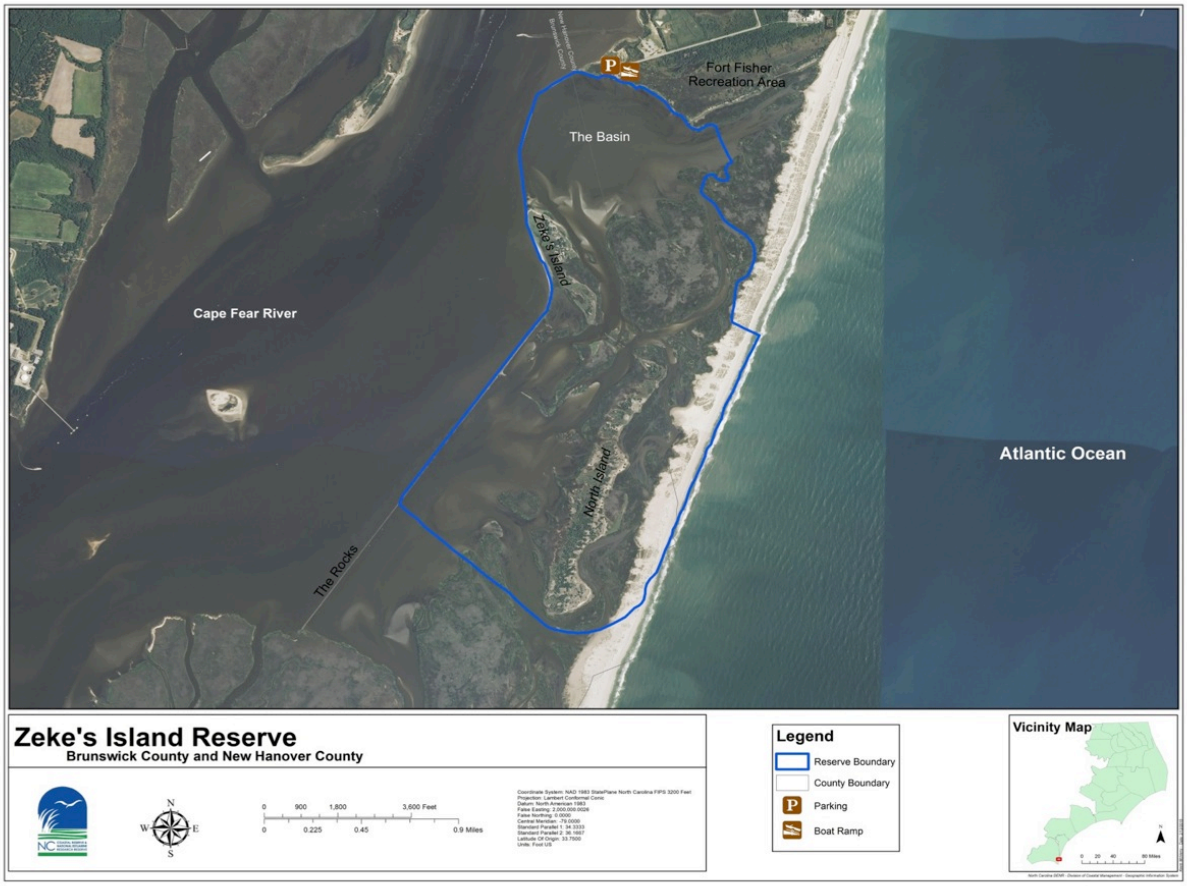


Sources: NCNERR Headquarters Office.

Figure 4 – Location map of Masonboro Island Reserve

Sources: NCNERR Headquarters Office.

Figure 5 – Location map of Zeke's Island Reserve



Sources: NCNERR Headquarters Office.

1.5 Authorities

Relevant laws and executive orders that form the statutory basis of the NCNERR are discussed below.

Coastal Zone Management Act (CZMA) – Section 315 of the CZMA of 1972, as amended, initiated the NERR system. The Act is administered by NOAA's Office for Coastal Management (OCM); specifies principles and procedures for management of the nation's coastal resources, including the Great Lakes; and balances economic development with environmental conservation. The CZMA outlines two national programs—the National Coastal Zone Management Program and the NERRS. The 34 coastal programs aim to balance competing land and water issues in the coastal zone. The 28 NERRs serve as field laboratories to provide a greater understanding of estuaries and how they are impacted by humans. The overall program objectives of CZMA remain balanced to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone" (NOAA 2012b).

Each NERR is intended to operate as a federal/state partnership. The North Carolina Division of Coastal Management (NCDCM) is the state partner and managing entity for NCNERR.

State Authorities and Oversight – The NC Department of Environment and Natural Resources (NCDENR) is the lead state agency charged with protecting North Carolina's environment and natural resources. As a division within NCDENR, NCDCM works to protect, conserve and manage North Carolina's coastal resources and was designated as the NCNERR managing entity upon its designation in 1985. NCDCM provides land ownership and management, staff, programming, and matching funds for the implementation of the NCNERR. Beyond the four NCNERR components, DCM also has six state reserve properties managed through the North Carolina Coastal Reserve (NCCR).

NCNERR Emergency Authorities – During an emergency situation, the NCNERR Manager has authority to direct Reserve staff to prevent immediate injury, loss of life, or damage to essential Reserve property and natural resources. This includes decisions to have staff evacuate and/or work from home with approval from NCDCM. The Reserve Manager will direct staff to support other response agencies implementing an area response, when appropriate. In most cases, the NERR will not serve as the lead for incident response, but may serve as a supporting or coordinating entity. The Reserve Manager (or the manager's designee) coordinates with the local fire departments, county emergency management agencies, and other response agencies to support

NCNERR emergency preparedness (including planning, sharing information, exercises, and training to improve disaster preparedness).

Generally, the NCNERR will not play a primary role for emergency response. Table 2 provides example actions and the NERR role for each action. As indicated, most decisions are reserved for appropriate local, state, and federal agencies, and the NCNERR will provide necessary support. This plan is designed to help ensure that Reserve staff and visitors are prepared and protected during emergency situations and to identify the capabilities of the NCNERR to support emergency response agencies where appropriate.

Table 2 - Emergency Actions and Agency with Authority

Emergency Action	Agency with Authority
NERR area closures or emergency restriction of actions	NCNERR Manager in consultation with authorities (all components)
Area-wide NERR evacuations or shelter-in-place decision	County Emergency Management personnel (all components)
Road closures	County Sheriff (Currituck Banks; Zeke's Island) Not applicable (Rachel Carson, Masonboro Island)
Navigable waterway closure	U.S. Coast Guard, Sector North Carolina
Arrests or reports of trespassers or those harming wildlife, stealing timber, committing vandalism, or other illegal activities	NERR Site Manager notifies County Sheriff (all components) or Town Police (Rachel Carson) of activity. NCWRC Enforcement Officers or NCDMF Marine Patrol may also be contacted depending on reported activity (all components).
Decisions on environmental impact trade-offs such as sacrificing certain habitat to protect higher priority habitat	Local, state, or federal incident command (IC) lead agency makes response decisions, consulting with NCNERR Manager as feasible. The Reserve can share information, resources, and local knowledge regarding natural resource priorities and protection strategies.
Determination of oil/hazmat cleanup endpoint (i.e., "how clean is clean?")	Local, state, or federal IC lead agency makes decisions, consulting with NCDCM and NCNERR Manager as feasible, for decisions within the Reserve's boundaries.
Mitigation of emergency shoreline erosion	United States Army Corp of Engineers and NCDCM

1.6 Scope

This DRP is a comprehensive emergency management plan. As such, it serves as a primary, albeit general, guide for mitigating the full range of emergencies and disasters that may impact the NERR. As a comprehensive emergency plan, it also addresses the full range of activities that may be implemented before, during, and after an emergency (with a primary focus on preparedness and response). Most importantly, it provides a framework for effective cooperation among local, state, federal, private and other non-governmental organizations during emergency response. Specifically, this plan does the following:

> *A **comprehensive emergency management plan** addresses all hazards and phases of related planning—including mitigation, preparedness, response, and recovery. It also addresses issues such as planning for business continuity.*

1. Defines NERR emergency management policy.
2. Identifies the natural resources and supporting research infrastructure that require protection and the methods used to protect these.
3. Describes the framework, organization, capabilities, and processes needed to implement disaster operations.
4. Recognizes the National Incident Management System (NIMS) and the National Response Framework (NRF) as the national framework used for response efforts.

This plan uses the terms "emergency" and "disaster" interchangeably. Generally, the term "emergency" describes any situation that requires immediate, extraordinary action to save life, health, property, or the environment. Emergencies can require minutes, hours, or days to overcome. The term "disaster" refers to incidents that result in profound loss, recovery from which can require months, years, or even decades. Both emergencies and disasters require extraordinary response, so the terms are used interchangeably in this plan. When it becomes necessary to distinguish between the two terms, this plan explains why a certain term is used.

This DRP also represents the first effort to formalize a multi-hazard emergency management program at the North Carolina NERR. Previously NCNERR only had a single hazard Hurricane Preparedness Plan. This plan was developed to support NOAA and state interests to establish fundamental emergency management programs at individual Reserves and a framework for emergency management improvements for the NERRS. This plan is separated into a "base plan" and "appendices." The base plan uses numbered sections to describe disaster policy and planning. Appendices provide

additional information and the tools necessary to implement NERR emergency-related policy.

1.7 Assumptions

Planning assumptions provide a foundation for subsequent emergency management program efforts. Planning assumptions related to this plan are listed below:

1. Emergencies and disasters may occur with or without warning.
2. The NERR's primary daily functions are research and monitoring, stewardship, education and coastal training. The NERR has responsibility to protect staff, visitors, property, and natural resources from injury or damage within available capabilities.
3. Local, state, federal, and other response organizations will function according to the National Incident Management System (NIMS) and the National Response Framework (NRF) to achieve inter-agency coordination.
4. The NERR staff will be familiar with NIMS to assist or cooperate with other agencies during multi-agency responses.
5. This plan is intended to provide dual functionality: (1) as a detailed document supporting NERR pre-disaster planning, exercising, and preparedness efforts and (2) as a quick reference guide for response personnel should an emergency or disaster situation arise at the NERR.
6. The NERR will manage some emergencies, whenever possible, without outside assistance. Outside assistance will be requested when capabilities are inadequate or inappropriate to the task.
7. Outside assistance will generally be requested from local emergency authorities or through NCDCM.
8. Priorities for incident response will generally be lifesaving, infrastructure protection, natural resource protection, and community resiliency.
9. The NERR and local partner agencies will regularly review planning efforts, conduct training, and engage in exercises to maintain disaster preparedness.

2.0 Emergency Planning Factors

Emergency planning for the NERR addresses three critical factors:

- People, infrastructure, and physical and biological natural resources (along with their vulnerabilities) must be identified so that they can be effectively protected from disaster.
- Hazards that may affect resources at the NERR must be analyzed to anticipate and mitigate potential impacts of those hazards.
- The necessary response capabilities for a disaster must be identified, maintained, and prepared for before an event.

Each of these factors is addressed in the sections that follow. Additional information is provided in the appendices.

2.1 NERR Resources at Risk

The North Carolina NERR has identified people, infrastructure, and natural resources that must be protected. General emergency management plans focus primarily on protecting people and infrastructure. Protecting the people and infrastructure at the NERR is understood to be important, but this plan places additional emphasis on protecting the natural resources that are the center of the NERR's mission.

During a response event at the NERR, NERR Emergency Contacts identified in Appendix B should be consulted regarding (1) people, infrastructure, and natural resources to be protected, (2) areas appropriate for staging activities, and (3) NERR emergency capabilities that can support an effective and protective response effort. The Quick Reference Tool in Appendix J (Forms and Tools) can be used by NERR personnel to share information with response personnel, when appropriate.

2.1.1 People

Life saving is the top priority for emergency planning at the Reserve. People expected to need protection during an emergency include full-time and part-time Reserve staff, visiting researchers, and visitors to the NERR sites and offices. Table 3 summarizes the People at the NCNERR and Appendix B lists emergency contacts for select NERR Staff.

Table 3 - People at the NCNERR

Category	Description
Full Time Staff:	**Headquarters Office:** Program Manager, Research Coordinator, Education Coordinator, Coastal Training Coordinator, Central Sites Manager, GIS Specialist, Communications Specialist **Wilmington Office:** Stewardship Coordinator and Southern Sites Manager, 2 Research Biologists, Education Specialist **Northern Sites Office:** Northern Sites Manager
Annual Visitors:	The NCNERR does not currently count or estimate visitors given the disparate and uncontrolled access points at the sites.
Potential non-counted users:	Non-registered researchers, commercial fishers, recreational users on boats, etc.

Sources: NCNERR web site and NCNERR Management Plan (NCNERR, 2009).

Because none of the Reserve components require visitor registration, it may be a challenge to identify all people present on the Reserve when a hazard event occurs. Rachel Carson and Masonboro Island are accessible only by boat, but Currituck Banks and Zeke's Island are both accessible by car. People visit the Reserve components to engage in a variety of activities, including boating, hiking, fishing, shellfish harvesting, hunting, photography, and other recreational activities. While NERR staff and office visitors can be easily contacted and accounted for during an emergency, other members of the public within the NERR boundaries may not be known or easy to contact. The Reserve coordinates with partner agencies and area response agencies through training and exercises to help consider and address warning and protecting NERR staff, visitors, and non-registered users. Reserve staff can and do close Reserve components through press releases and other public notification systems when public safety is at stake (e.g., during a hurricane); however there is not a physical closure of the components given the nature of the components.

2.1.2 Infrastructure

Infrastructure includes physical structures located on the NERR sites and equipment that support Reserve operations. No Reserve component has any physical buildings on the premises, as all offices are offsite.

Table 4 - Infrastructure at the NCNERR

Category	Description
Primary Buildings:	There are no buildings on any of the Reserve components. All Reserve offices are offsite and are owned and managed by partner organizations (Kitty Hawk – Town of Kitty Hawk; Beaufort – NOAA; Wilmington – University of North Carolina Wilmington).
Support Structures:	**Currituck Banks:** Concrete parking lot, 1/3 mile boardwalk, plant and tree identification signs, interpretive signs, 1.5 mile primitive trail with benches, North Beach Access ramp managed by Currituck County **Rachel Carson:** One mile primitive loop interactive trail, 500 ft. boardwalk across from the Town of Beaufort public boat ramp, interpretative signs **Masonboro Island:** Currently no on-site facilities **Zeke's Island:** Interpretive signage, rock jetty
Utilities:	**Currituck Banks:** None **Rachel Carson:** None **Masonboro Island:** None **Zeke's Island:** None
Support Equipment:	**Currituck Banks:** 16' Jones Brother semi-V hull equipped with a four-stroke 50 hp Johnson outboard engine, 2007 4WD Jeep Grand Cherokee **Rachel Carson:** 17' Jones Brother boat equipped with a Suzuki outboard motor, 27' Carolina Skiff boat equipped with a Yamaha outboard motor, 2 - kayaks, 2007 4WD Dodge Durango **Masonboro and Zeke's Islands:** 24' Carolina Skiff boat equipped with a Yamaha outboard motor , 19' Jones Brother Bateau equipped with a Yamaha four-stroke 60 hp outboard engine, 16' Carolina Skiff outfitted with a Yamaha four-stroke 25 hp outboard engine, 16' aluminum Jon boat with a 15 hp Yahama four-stroke outboard engine, multiple kayaks, 4WD Dodge Durango
Long-term and Permanent Monitoring Stations:	**Currituck Banks:** None **Rachel Carson:** 1 SWMP Site **Masonboro Island:** 2 System-wide monitoring Program (SWMP) sites, meteorological station, chlorophyll *a* monitoring station, nutrient monitoring station Zeke's Island: 2 System-wide Monitoring Program (SWMP) Sites

Sources: NCNERR Management Plan (NCNERR, 2009).

Research and Monitoring of Natural Resources – As part of its ongoing mission, the NERR supports research and monitoring efforts. These efforts include the use of monitoring stations and direct observations and mapping of natural resources at the Reserve. Protecting permanent and temporary monitoring stations is important because these stations support ongoing research critical to the mission of the NERR. Loss of data collection stations could interrupt research efforts or result in an irreplaceable loss of data. The NCNERR conducts environmental monitoring and research efforts related to studying natural resources and stewardship. This includes participating in the NERR system's system-wide monitoring program (SWMP) to help evaluate overall NERR system health.

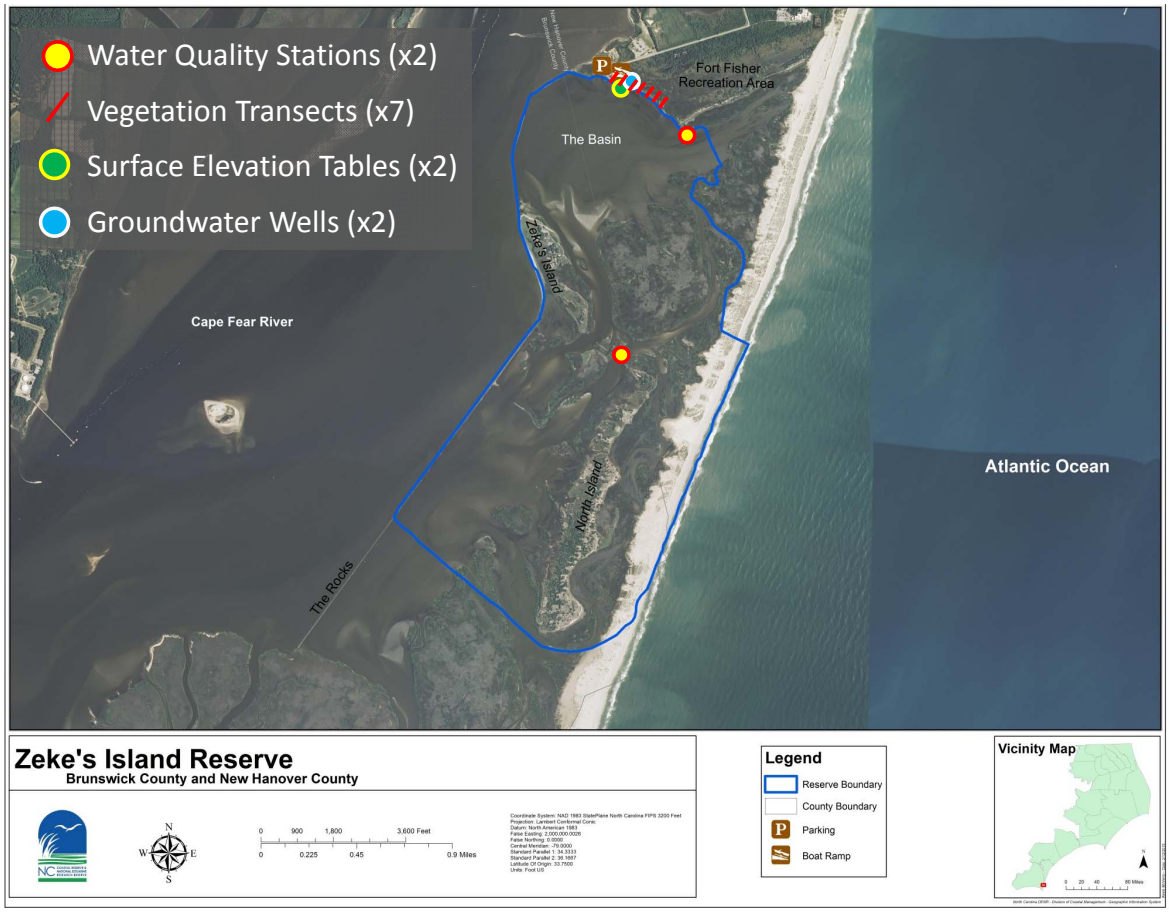
Masonboro Island and Zeke's Island both house two NERRS SWMP long-term water quality stations. Chlorophyll *a* and nutrient monitoring stations are also located at Masonboro Island Reserve. The NCNERR meteorological station is also located on Masonboro Island. These long-term monitoring stations have been active since 1994 and are key to assessing changes in water quality associated with land use and eutrophication. The Chlorophyll *a* probes have been upgraded with sondes that allow estimates of Chlorophyll *a* to obtained every 15 minutes, as opposed to previously obtaining them only once per month. Chlorophyll *a* is an important indicator of water quality in the state of North Carolina and among numerous research entities. SWMP component 1 water quality monitoring also exists at Middle Marsh at the Rachel Carson site through a partnership between NCNERR and the National Park Service. Data acquired from this station are utilized by local academic organizations, the NPS, and NCNERR.

Damage to these stations and associated equipment could incur replacement costs, cause a significant loss of data, and compromise the value of long-term studies. In addition to playing a critical role for the Reserve's mission, these data can support response by providing information on:

- Priorities for fish, wildlife, and habitat protection;
- Appropriate areas for access and staging efforts (e.g., to avoid sensitive areas); and
- Baseline data on pre-event conditions (e.g., to support NRDA following an oil or chemical spill) (see Section 3.4.1).

Figure 6 shows monitoring stations used to collect data on NCNERR natural resources; Reserve personnel can provide information on these stations.

Figure 6 – Monitoring Stations at the NCNERR



Sources: NCNERR Headquarters Office.

2.1.3 Natural Resources

The NERR's mission includes protecting the physical and biological natural resources within its boundaries. This section describes natural resources to be protected.

The North Carolina NERR is characterized by a broad variety of estuarine habitats typical of both the Virginian and Carolinian biogeographic regions. The Currituck Banks component is an excellent example of an undisturbed cross-section of a barrier island in a low-salinity estuarine system. Currituck Sound and associated marshes constitute the main area of the component, with extensive mud and sand flats covered intermittently by submerged aquatic vegetation. The buffer communities consist of ocean beaches, upland dunes, shrub thickets, maritime forests, and interdune ponds. The mixing of the warm Gulf Stream Current and the cooler Labrador Current creates a climate with species from both northern and southern ranges. The Rachel Carson component consists of sound waters, tidal flats, creeks, and marshes in its core area. There are dredge material deposits along the north edge of the Reserve along Taylor's Creek. There are also areas of beaches, dunes, shrub thickets, and a maritime forest remnant. Masonboro Island and adjacent dredge spoils are occupied by subtidal soft bottoms, tidal flats, hard surfaces, salt marshes, shrub thicket, maritime forest, dredge spoil areas, grasslands, ocean beach, and sand dunes. Federally listed threatened species such as loggerhead and green sea turtles and seabeach amaranth plants utilize these resources. The nutrient rich waters surrounding the island are also provide crucial nursery habitat. Zeke's Island largely consists of the same habitats as Masonboro Island. The expansive intertidal flats serve as highly important shorebird habitat in the southeastern North Carolina region. Table 5 provides a summary of natural resources at the Reserve and Figures 7-10 provide maps showing the location of the different habitats within the NERR boundaries. This information is described in more detail in the NERR's Management Plan.

Table 5 - Natural Resources at the NCNERR

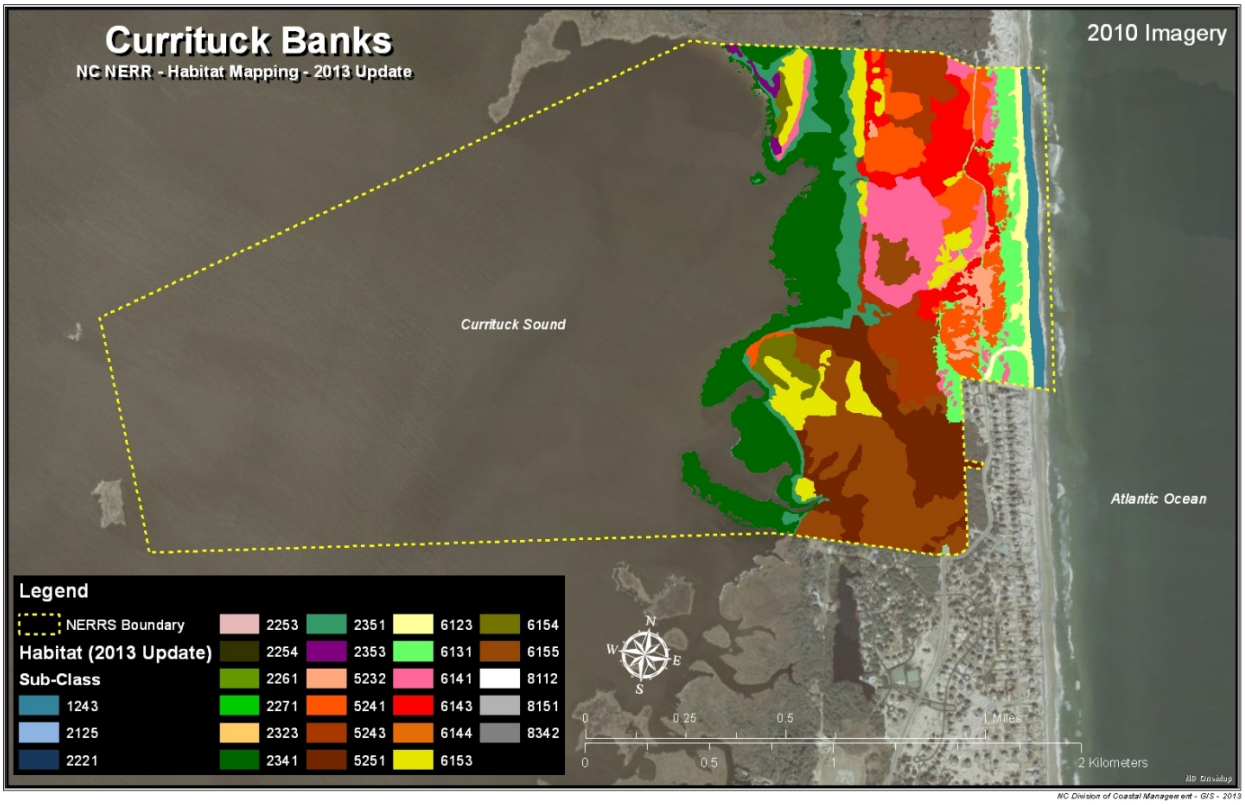
Category	Description
Extent of NERR:	**Currituck Banks:** A cross-section of a barrier island in the Virginian biogeographic province. The 965 acre component is located in the northeastern corner of North Carolina in Currituck County, just north of the unincorporated village of Corolla. **Rachel Carson:** Entire component located in Carteret County, with the western portion of the site being within the jurisdiction of the Town of Beaufort. Add acres **Masonboro Island:** An 8.4 mile barrier island encompassing 5,653 acres. The site is located within New Hanover County. **Zeke's Island:** Located in both New Hanover and Brunswick counties, and includes 1,635 acres made up of Zeke's Island proper, North Island, No Name Island, the barrier beach spit, the open lagoon like area known as the Basin, and the surrounding marshes, creeks, and flats.
Habitat Types:	**Currituck Banks:** Site includes extensive mud and sand flats covered intermittently by submerged aquatic vegetation, ocean beaches, upland dunes, shrub thickets, maritime forests, and interdune ponds. **Rachel Carson:** Site consists of five islands (Middle Marsh, Carrot Island, Town Marsh, Bird Shoal, and Horse Island). Salt marshes, seagrasses, subtidal/intertidal flats, and maritime forest are all important habitat types found on the site. **Masonboro Island:** Site includes Masonboro Island Proper, adjacent dredge spoil sites along the Intracoastal Waterway and habitats in between. Habitat types include subtidal soft bottoms, tidal flats, hard surfaces, salt marshes, shrub thicket, maritime forest, dredge spoil areas, grasslands, ocean beach, and sand dunes. **Zeke's Island:** Site includes subtidal soft bottoms, tidal flats, hard surfaces, salt marshes, shrub thicket, maritime forest, dredge spoil areas, grasslands, ocean beach, and sand dunes.
Threatened and Endangered (T&E) Species:	**Currituck Banks:** Threatened species include loggerhead sea turtles and green sea turtles **Rachel Carson:** Threatened species include loggerhead sea turtles and green sea turtles **Masonboro Island:** Threatened species include loggerhead sea turtles, green sea turtles, and seabeach amaranth. **Zeke's Island:** Threatened species include loggerhead sea turtles, green sea turtles, and seabeach amaranth.
ESA Critical or Essential Habitat	**Currituck Banks:** N/A **Rachel Carson:** N/A **Masonboro Island:** Ocean beach for loggerhead sea turtle nearshore reproductive habitat **Zeke's Island:** Ocean beach for loggerhead sea turtle nearshore reproductive habitat
Economic and Commercial Value:	**Currituck Banks:** The mature maritime deciduous forest in the component's boundaries is one of the rarest habitat types in the U.S. The mixing of the Gulf Stream Current and Labrador Current creates a climate with species from both Northern and Southern regions. There is a rich community of both commercial and game fish species in the sound such as largemouth bass, yellow perch, tidewater silverside, and blue-spotted sunfish. Currituck Sound is located within the Atlantic flyaway making the site especially important to migrating waterfowl. There are several key species of concern found on the site including the newly identified crystal skipper butterfly, sea turtles, diamondback terrapins, wild horses, and

	seabeach knotweed. **Rachel Carson:** Salt marsh and tidal flats are important nursery areas for estuarine species. The shrubbery thicket on Middle Marsh is both a heron and egret rookery. Over 200 species of birds have been observed at the site, as it is along the Atlantic Migratory Flyway. There are several key species of concern found on the site including the newly identified crystal skipper butterfly, sea turtles, diamondback terrapins, wild horses, and seabeach knotweed. **Masonboro Island:** Masonboro Sound is an important nursery habitat for recreational and commercial fish, and also provides a local source of shellfish. The ocean beach, sand dunes, and marshes provide storm and flooding protection, and shellfish provide water filtration. **Zeke's Island:** Estuarine waters around the reserve are highly productive and used for commercial and recreational fishing. A variety of fish and shellfish species also use the area as a nursery ground. Like on Masonboro Island, storm and flooding protection is provided by ocean beach, sand dunes, and marshes.

Source: NCNERR Management Plan (NCNERR, 2009)

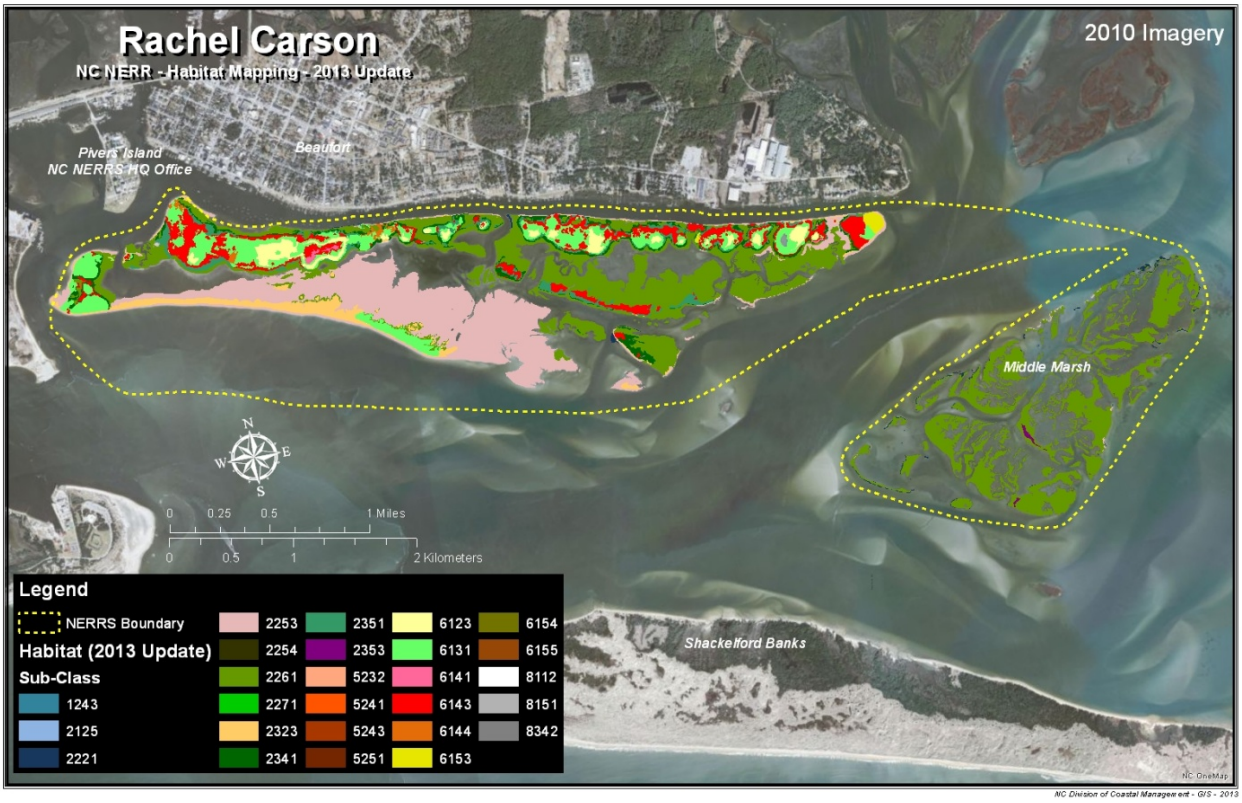
Reserve resources can be impacted by invasive species; development; human- or nature-induced erosion and hazard events like hurricanes, chemical or oil spills; and other impacts. NCNERR staff work to protect the Reserve's natural and cultural/historic resources. This includes, manage invasive species, educate students and decision-makers, protect and restore habitats, and protect endangered species, waters, and lands at the Reserve. Figures 7-10 show habitat types found within the NERR. Descriptions of these habitats are also included in the NERR Management Plan.

Figure 7 – Natural Resource Habitats at Currituck Banks Reserve



Sources: NCNERR Headquarters Office.

Figure 8 – Natural Resource Habitats at Rachel Carson Reserve



Sources: NCNERR Headquarters Office.

Figure 9 – Natural Resource Habitats at Masonboro Island Reserve

Sources: NCNERR Headquarters Office.

Figure 10 – Natural Resource Habitats at Zeke's Island Reserve

Sources: NCNERR Headquarters Office.

Figure 11 – Natural Resource Habitats Legend

Appendix F. Habitat Cartographic Color Scheme (RGB)

(***Mapped Habitats in North Carolina***)

Habitat		Sub-Class	COLOR	RGB
Marine	1243	Sand		49-132-155
Estuarine	2125	Organic		141-180-227
	2221	Mollusk		23-55-93
	2253	Sand		230-185-184
	2254	Mud		51-51-0
	2261	Persistent		102-153-0
	2271	BLD		0-204-0
	2323	Sand		255-204-102
	2341	Persistent		0-102-0
	2351	BLD		51-153-102
	2353	Sand		128-0-128
Palustrine	5232	Persistent		255-167-127
	5241	BLD		255-85-0
	5243	BLE		168-56-0
	5251	BLD		115-38-0
Upland	6123	Sand		255-255-153
	6131	Grassland		102-255-102
	6141	BLD		255-102-153
	6143	BLE		255-0-0
	6144	NLE		228-109-10
	6153	BLE		230-230-0
	6154	NLE		115-115-0
	6155	Mixed		151-72-7
Cultural Land Cover	8112	Paved Roadway		255-255-255
	8151	Dirt/Gravel Lot		178-178-178
	8342	Rocky In-Water Structure		128-128-128

Sources: NCNERR Headquarters Office.

Oceanography – The immediate coastal regions of North Carolina are influenced greatly by the prevailing ocean currents. Two ocean currents, the Gulf Stream and the Labrador Current, converge off of Cape Hatteras. The Gulf Stream provides a warming effect to the southern coastal areas, and the Labrador Current provides a cooling effect for the northern coastal section. North Carolina's coastal plain juts out from the East Coast of the United States into the Atlantic Ocean and these currents. The coastline is subdivided into three distinct regions (Northern, Central and Southern) based on geomorphological and ecological features. Each region has a unique geologic framework that results in distinctive types of barrier islands, inlets and estuaries influenced by different wave and tidal processes. The Northern coastal plain drains the Pasquotank, Chowan and Roanoke River Basins. The sediments consist of unconsolidated mud, muddy sand, sand and peat sediments, which create a gently sloping topography with an average slope of only 0.2 feet per mile. Rising sea level combined with the gentle slope of the region has produced long barrier islands with drowned lowlands that lie behind the islands. There are currently no inlets along the Northern coastline, which has caused a transformation in Currituck and Albemarle Sounds from a high salinity estuarine environment to a low salinity (rarely exceeding 10 ppt salinity) estuarine environment that is affected by wind-dominated tides. The Central region drains the Tar, Neuse and White Oak River Basins into Pamlico Sound, which is part of the Albemarle-Pamlico estuarine system. The Albemarle-Pamlico estuarine system is bounded to the east by long barriers islands with flooded lowlands behind the islands and covers more than 3,594 square miles. This region is characterized by shallow slopes, poor drainage, and numerous inlets, which facilitates the mixing of freshwater and saltwater. The Southern coastal plain drains the Cape Fear and Lumber River Basins and contains numerous inlets through the barrier islands allowing the rivers to fully mix with the ocean. As such the estuaries in the south are generally much smaller than those in the north and highly brackish (18-30 ppt). An average slope of 3 feet per mile due to the uplifting of the Carolina Platform and rising sea level in this part of the State has led to the production of short, stubby barrier islands and narrow back-barrier estuaries.

Other Information Regarding the NERR's Natural Resources - NOAA and North Carolina Natural Heritage Program collaborate to produce Environmental Sensitivity Index (ESI) maps and Tidal Inlet Protection Strategies (TIPS) for hazardous chemical or oil spill response. These data identify sensitive fish, wildlife, and habitat, and can be used to recommend protection strategies in the event of an oil spill within the area. ESI data and maps can be found at: http://response.restoration.noaa.gov/maps-and-spatial-data/download-esi-maps-and-gis-data.html

The North Carolina NERR may participate in the U.S. Coast Guard (USCG)-led Area Committee planning for oil spills. The Area Contingency Plan Geographic Response Plans (GRP) include information and maps on the most recently developed protection strategies for tidal inlets and environmentally sensitive areas. The reserve has requested access to these plans.

2.2 Hazards

The North Carolina NERR has identified hazards, their potential impacts, and relative risk using a Hazard Identification and Risk Assessment (HIRA) Tool. Each Reserve component was considered independently, and HIRA results for each component will be presented separately. Tables 6 - 9 lists the hazards identified as most significant to the NERR in order of descending relative rankings (high, medium, low). Results of the most recent HIRAs are provided in Appendix F – Hazard Identification and Risk Assessment Tool. Section 3.0 of this DRP addresses preparedness and mitigation actions for priority hazards.

Table 6 - NERR Hazards and Relative Priority for Hazard Mitigation: Currituck Banks Reserve

Events/Hazards	Risk Ranking Outcome
Hurricane	High
Coastal Erosion	High
Severe Coastal Storms	High
Oil Spill	Medium
Heavy Rainfall/Riverine Flooding	Medium
Invasive Species	Medium
Harmful Algal Bloom (HAB)	Medium
Vessel Grounding	Medium
Hazmat (other than oil)	Medium
Lightning	Medium
Wildland Fire	Medium
Earthquake	Low
Tornado	Low
Aircraft Crash	Low
Rail Hazmat	Low

Law Enforcement Response	Low
Medical/ Rescue Emergency	Low
Structure Fire	Low

Table 7 - NERR Hazards and Relative Priority for Hazard Mitigation: Rachel Carson Reserve

Events/Hazards	Risk Ranking Outcome
Hurricane	High
Severe Coastal Storms	High
Vessel Grounding	High
Coastal Erosion	High
Invasive Species	High
Tornado	High
Harmful Algal Bloom (HAB)	Medium
Wildland Fire	Medium
Medical/ Rescue Emergency	Medium
Heavy Rainfall/Riverine Flooding	Medium
Oil Spill	Medium
Aircraft Crash	Medium
Hazmat (other than oil)	Medium
Lightning	Low
Law Enforcement Response	Low
Structure Fire	Low
Earthquake	Low
Rail Hazmat	Low

Table 8 - NERR Hazards and Relative Priority for Hazard Mitigation: Masonboro Island Reserve

Events/Hazards	Risk Ranking Outcome
Hurricane	High
Severe Storms	High

Coastal Erosion	High
Hazmat (other than oil)	Medium
Law Enforcement Response	Medium
Medical Emergency/ Rescue	Medium
Riverine Flooding/ Stormwater Runoff	Medium
Vessel Grounding	Medium
Wildland Fire	Medium
Oil Spill	Medium
Invasive Species	Medium
Tornado	Low
Aircraft Crash	Low
Lightning	Low
Earthquake	Low
Harmful Algal Bloom (HAB)	Low
Rail Hazmat	Low
Structure Fire	Low

Table 9 - NERR Hazards and Relative Priority for Hazard Mitigation: Zeke's Island Reserve

Events/Hazards	**Risk Ranking Outcome**
Hurricane	High
Severe Storms	High
Riverine Flooding/ Stormwater Runoff	High
Coastal Erosion	Medium
Hazmat (other than oil)	Medium
Medical Emergency/ Rescue	Medium
Wildland Fire	Medium
Oil Spill	Medium
Invasive Species	Medium
Vessel Grounding	Low
Aircraft Crash	Low
Tornado	Low

Harmful Algal Bloom (HAB)	Low
Earthquake	Low
Law Enforcement Response	Low
Lightning	Low
Rail Hazmat	Low
Structure Fire	Low

While the NERR's DRP helps improve preparedness for all hazards, identifying high and medium hazard priorities assists in focusing planning and mitigation resources. Appendix F will be reviewed and updated annually as hazard priorities are refined and mitigation needs are identified, implemented, and maintained.

2.3 Emergency Capabilities

Emergency management resources (called emergency capabilities in this plan) are critical for protecting natural resources, people, and property during an emergency. Capabilities include facilities, equipment, supplies, and personnel. The NIMS includes standard definitions and categories for cataloging these items (FEMA 2012). This DRP uses the term "capabilities" rather than "resources" to avoid confusion with discussions of the NERR's natural resources. Representative NERR emergency capabilities are summarized below:

- Equipment – The NERR includes a range of equipment that can support localized or area responses, including: boats, sampling equipment, supplies, radios, log books, GPS/GIS units, computers, cameras, and other equipment.
- Supplies – The NERR includes supplies that are used to support day-to-day operations (e.g., laboratory supplies, sample bottles, fuel, tags, etc.) as well as some emergency supplies (e.g., water, first aid, etc.).
- Personnel – The NERR includes trained personnel that can support emergency response operations in an Emergency Operation Center (EOC) or in the field. The NERR also includes other personnel that may be able to support ancillary needs during an emergency event or share local knowledge and experience of the area (as appropriate to the emergency response). Typical roles for Reserve personnel might include:
    - Sharing scientific support for fish and wildlife and habitat protection or restoration efforts

- Supporting continuous baseline biological and environmental data collection and dissemination
- Implementing water, soil, and sediment sampling for spill surveillance and monitoring
- Supporting or providing volunteers or space to support wildlife cleaning and care
- Providing transportation or guides within the Reserve's boundaries

The NERR personnel, facilities, and equipment, used collectively, can generate information that can support emergency response activities. These include:

- Knowledge of NERR users – The Reserve's staff understand the NERR area, persons that use the area, entities operating within the NERR boundaries, and particular considerations regarding life-saving concerns that could expedite emergency operations during a hazard event.
- Knowledge of NERR facilities and on-site infrastructure – The Reserve's staff can provide information on support structures, utilities and other systems (e.g., information technology, communications) that can support prioritization of response efforts at the Reserve in the event of a hazard incident.
- Knowledge of NERR natural resources – The Reserve's personnel have significant knowledge and mapping data regarding priority habitats for protection, cultural and historic resources, oyster beds, coastal areas, endangered species and nesting areas, environmentally sensitive areas, and related natural resource information that can assist response, while protecting resources.
- Data – The NERR mission includes research and monitoring, stewardship, coastal training and education. Therefore, NERR personnel can share data on water quality, tides, water depth, telemetry, areas that present a wildfire risk, threatened/endangered or invasive species, appropriate safe areas for staging activities, access routes, and other NERR-specific information that can support responders. This information can support emergency response planning agencies before events as well as during post-emergency assessment and recovery.

Appendix B provides an Emergency Contact List; NERR emergency contacts can provide additional information on emergency capabilities to support localized or area response efforts. Appendix C provides a list of emergency capabilities that can support emergency response.

3.0 Concept of Operations

Although the NCNERR does not employ a full-time or part-time emergency manager, maintaining disaster preparedness at the NERR is a priority, and is managed with a Concept of Operations that describes how different emergency activities are to be coordinated.

The NERR Manager assumes primary responsibility for disaster preparedness and serves as the de facto NERR Emergency Manager. The NERR Manager has assigned emergency management program support activities as described in Table 10.

Table 10 - NERR Emergency Management Assignments

Support Activity	Assigned To	Title
Attends emergency planning meetings, develops plans and procedures, and supports the Emergency Team	Relevant Site Manager or Other Designated Staff, as applicable and capable	N/A
Facilitates training, and exercises; and maintains training and exercise plan. This person also serves as an important backup for the relevant site managers or support staff	Coastal Training Program Coordinator	Emergency Training and Exercise Coordinator
Maintains the Hazard Identification and Risk Assessment (HIRA). This person also maintains a list of capabilities (supplies and equipment that can be used during emergencies) and serves as a backup to the Emergency Training and Exercise Coordinator	Site Managers (Northern, Central, and Southern)	Emergency Risk Manager and Capability Coordinator
Maintains DRP annually: keeps emergency contact lists up to date, and revises hazard-specific procedures as needed	Central Sites Manager	Emergency Preparedness Coordinator
Develops emergency management policy for the NERR, maintains the emergency management program annual work plan, develops program notes, and reports progress. Leads Reserve response efforts during hazard events	NERR Manager	Emergency Manager
Maintains research and monitoring station and deployed equipment inventories. Leads decision making for monitoring pre-, during, and post-disaster events.	Research Coordinator	Research and Monitoring Coordinator

Individuals assigned roles listed in the table above comprise the NCNERR Emergency Team (ET). If deemed necessary, this team meets once a year before hurricane season

to discuss relevant events, plan, review progress, and ensure adequate support of future work. The NERR Manager may add other NERR staff and members of external agencies to the ET. The role of this expanded ET is to plan and manage response activity. Each year, the ET performs work in the following four areas: mitigation, preparedness, response, and recovery. The work of each area is described in the following sections.

3.1 Mitigation

Mitigation is activity designed to eliminate or reduce vulnerability before an emergency occurs.

The NCNERR maintains a HIRA Tool for each Reserve component that identifies hazards and considers the probability of occurrence of, vulnerability to, and impacts associated with these hazards. The HIRA output (see Tables 6 – 9) is a list of hazards and relative priorities that provides a basis for establishing a list of mitigation priorities and projects and allocating resources and implementing mitigation actions. The Site Managers are responsible for maintaining their respective HIRAs and tracking potential hazard mitigation actions. Examples of completed and planned mitigation activities at the Reserve are provided below:

- Increasing readiness through staff training
- Removal of invasive species (e.g., feral pigs)
- Increasing awareness of reserves via education programs

At times, general funding and grant monies may become available to mitigate risk identified during the HIRA and mitigation planning process.

3.2 Preparedness

Preparedness refers to readiness for response to an emergency or disaster that cannot be entirely mitigated. Preparedness involves planning, training, exercising, equipping, and supplying. Each of these preparedness activities is described below.

3.2.1 Planning

Emergency planning involves developing plans and procedures to respond to an emergency, including:

- Emergency operations plan (EOP) – This specifies policies and practices associated with an emergency. The elements of an EOP are addressed in Section 3.3.
- Standard operating procedures (SOP) – These describe the roles, responsibilities, resources, and activities of people and organizations assigned to an emergency. The elements for SOPs are referenced in this plan for specific hazards in Appendix D.
- Continuity of operations plan (COOP) – A document that describes how essential services and research will continue despite an emergency. The elements of a basic COOP are addressed in Section 4 and Appendix E.
- Other Emergency Plans – Certain agencies may be responsible for preparing specific emergency plans that affect the NERR. A list of area emergency plans is included in Section 1.2.

The Emergency Preparedness Coordinator facilitates and maintains these planning materials.

3.2.2 Training and Exercising

Training and exercising familiarizes people with the policies, plans, tools, and procedures for conducting response. The NERR considers the knowledge and experience people gain from training and exercising critical to a successful response and it reviews and implements training emergency exercises, as resources allow. The NERR works to provide adequate training so that NERR personnel responding to an incident can do so safely and proficiently.

Training recommended for NERR personnel is included with Appendix I – Emergency Training Plan. The NERR encourages staff to undergo as much training as possible, and maintains a copy of all emergency management training certificates within individual personnel files.

Exercising is an important complement to training. It develops proficiency and allows individuals and organizations to practice what they have learned. Regular exercising is also important to maintain proficiency and improve NERR preparedness.

The NERR will rely on available training courses and will participate in periodic training courses planned by other agencies. When invited and resources allow, the NERR will participate in area exercises with stakeholders.

Emergency Training and Exercise Coordinator plans and coordinates training and exercise work for the NERR and maintains associated documentation.

3.2.3 Equipping and Supplying

Various equipment and supplies are typically needed during an emergency. Necessary equipment can range from small or specialized personal protective equipment to boats, to generators and other large equipment. Supplies include batteries for handheld radios and emergency supplies water for those who may have to work for extended times or at remote locations during an emergency.

Many pieces of equipment and supplies are used day-to-day; others are obtained and stored for special use during emergencies (e.g., protective clothing, and extra sampling supplies). Still others may be requested from other organizations in the area. The NERR works with internal and external stakeholders to identify and track key equipment and supplies that might be needed during an emergency. Given that all four Reserve components have no buildings on-site and that evacuation plans before major events would be enacted, the Reserve does not currently maintain significant quantities of emergency supplies. During a major disaster, the Reserve would rely on supplies provided by local response agencies if the need to shelter in place arises. A catalog of Reserve equipment and supplies that can support response efforts is attached as Appendix C – Emergency Capability Catalog.

The NERR Emergency Team facilitates all emergency equipment and supply preparations.

3.3 Response

Response is activity that immediately follows an emergency or that occurs when an emergency is imminent. Response begins with notifying response agencies and dispatching responders. Emergencies can quickly overwhelm available resources and can necessitate extraordinary coordination efforts. This section details how the NERR provides level of direction, control, coordination, and communication necessary during NERR emergencies. The NERR Manager is ultimately responsible for the conduct of emergency response activity conducted by Reserve personnel.

3.3.1 National Incident Management System

Homeland Security Presidential Directive 5 and Presidential Policy Directive 8 require NIMS be implemented to coordinate interagency response activity. Since 2005, NIMS has been implemented throughout the U.S. from the local government and special district levels all the way to federal agencies and the White House. Advantages of using NIMS include:

- Common terminology – ensuring that responders use the same lexicon. Under NIMS, the terms "Incident Commander (IC)," "Incident Command Post (ICP)," and "Emergency Operations Center (EOC)" carry the same meaning throughout the U.S. Some of these key terms have been included in Appendix M – Glossary; potential responders are introduced to more terms during NIMS training.
- Capability typing – categorizing equipment reduces confusion when people request assistance. For example, when organizations use NIMS to request a small all-terrain brush fire engine with a certain capability and crew, they request a "Type 4 Engine" (FEMA 2012).
- Model organization – providing a clear, consistent framework to staff and manage an emergency.
- Standard processes and tools – providing methods and tools to conduct important processes like situation reporting, action planning, and resource (termed emergency capability in this plan) ordering.

The NIMS is part of a larger set of federal policy, guides, and tools within the NRF. In general, the NRF includes:

- National Preparedness Goal – a document that describes a national vision of emergency management, defines core capabilities, and identifies scenarios for which the nation should be prepared.
- NIMS – policy, practices, and tools that support interagency response.
- Numerous plans, appendices, guides, and resources – tools to help local and state emergency management organizations conduct their work.

NIMS implementation is scalable and flexible and can support small, isolated response efforts to large-scale, multi-agency, multi-jurisdictional responses. Incidents range from short-duration Type 5 responses using a handful of resources (e.g. medical emergency), to large, complex Type 1 multi-agency, multi-jurisdiction emergencies (e.g., hurricanes, major oil spills) that may require hundreds or thousands of resources deployed for months. Figure 12 shows NIMS scalability to incident complexity levels.

Figure 12 – NIMS Scales Response to Incident Complexity

Incident Complexity

Incident and/or event complexity determines emergency and incident response personnel responsibilities as well as recommended audience for NIMS curriculum coursework delivery. The *NIMS Training Program* training recommendations reflect the following five levels of complexity:

Type 1	• This type of incident is the most complex, requiring national resources for safe and effective management and operation. • All command and general staff positions are filled. • Operations personnel often exceed 500 per operational period and total personnel will usually exceed 1,000. • Branches need to be established. • A written incident action plan (IAP) is required for each operational period. • The agency administrator will have briefings, and ensure that the complexity analysis and delegation of authority are updated. • Use of resource advisors at the incident base is recommended. • There is a high impact on the local jurisdiction, requiring additional staff for office administrative and support functions.
Type 2	• This type of incident extends beyond the capabilities for local control and is expected to go into multiple operational periods. A Type 2 incident may require the response of resources out of area, including regional and/or national resources, to effectively manage the operations, command, and general staffing. • Most or all of the command and general staff positions are filled. • A written IAP is required for each operational period. • Many of the functional units are needed and staffed. • Operations personnel normally do not exceed 200 per operational period and total incident personnel do not exceed 500 (guidelines only). • The agency administrator is responsible for the incident complexity analysis, agency administration briefings, and the written delegation of authority.
Type 3	• When incident needs exceed capabilities, the appropriate ICS positions should be added to match the complexity of the incident. • Some or all of the command and general staff positions may be activated, as well as division/group supervisor and/or unit leader level positions. • A Type 3 IMT or incident command organization manages initial action incidents with a significant number of resources, an extended attack incident until containment/control is achieved, or an expanding incident until transition to a Type 1 or 2 IMT. • The incident may extend into multiple operational periods. • A written IAP may be required for each operational period.
Type 4	• Command staff and general staff functions are activated only if needed. • Several resources are required to mitigate the incident, including a task force or strike team. • The incident is usually limited to one operational period in the control phase. • The agency administrator may have briefings, and ensure the complexity analysis and delegation of authority is updated. • No written IAP is required but a documented operational briefing will be completed for all incoming resources. • The role of the agency administrator includes operational plans including objectives and priorities.
Type 5	• The incident can be handled with one or two single resources with up to six personnel. • Command and general staff positions (other than the incident commander) are not activated. • No written IAP is required. • The incident is contained within the first operational period and often within an hour to a few hours after resources arrive on scene. • Examples include a vehicle fire, an injured person, or a police traffic stop.

Source: FEMA 2011

In cases where another entity is required take charge in response to a disaster, NERR personnel will support a NIMS organization established by the lead response entity. Familiarity with NIMS practices and principles will enhance the NERR's ability to undertake initial response actions until primary response agencies arrive on-scene, and to integrate into an Incident Command/UC led by another agency, when appropriate. As an event grows in size and complexity, the Incident Commander may delegate functions to incident staff from a range of agencies. NIMS standardizes primary staff positions within the functions of Operations, Planning, Logistics, and Finance/Administration (Figure 13).

Figure 13 – Standard NIMS Implementation

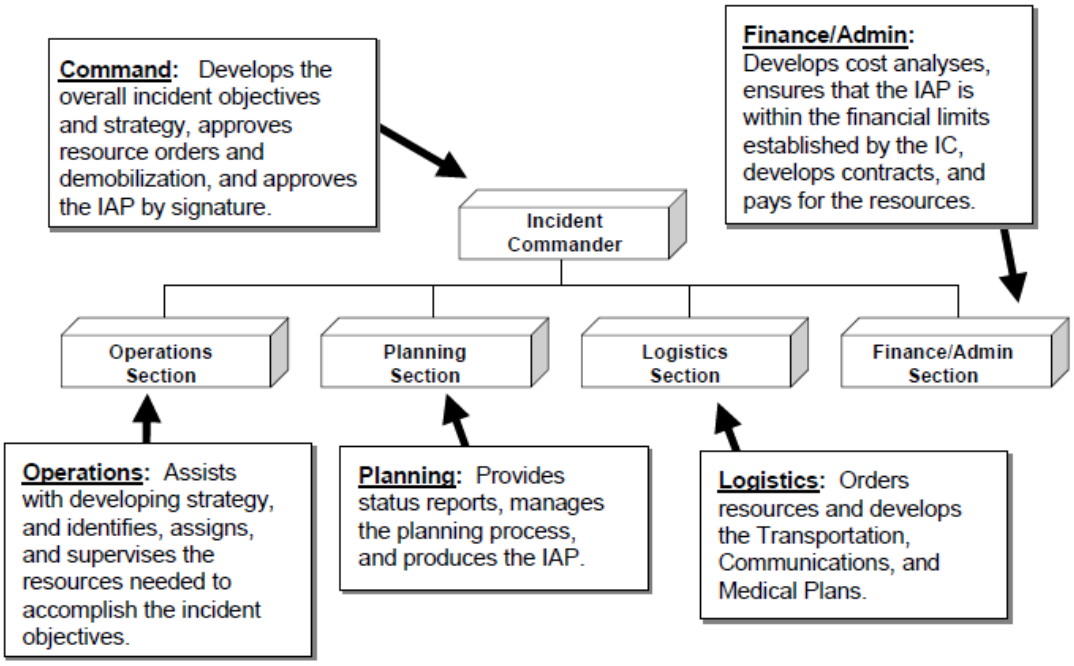


Figure Notes: IC indicates Incident Commander. IAP indicates Incident Action Plan. NIMS implementation will be scaled based on the magnitude of the response. For small events, one party may fulfill multiple roles.

3.3.2 Essential Facilities

When it is necessary for response activities to be located at the Reserve, the Reserve will manage or support another agency's management of disaster from the NCNERR Offices nearest the Reserve component in use (Kitty Hawk, Beaufort, or Wilmington), in consultation with the facility owner/manager. Each location has some equipment and supplies that could support emergency efforts (see Appendix C – Emergency Capability Catalog). When operating to support a response effort led by another agency, Reserve personnel would use essential facilities belonging to the parties identified in Appendices B and G (e.g., associated with local fire department or county, state, NOAA and other federal emergency management agencies).

3.3.3 Situation Awareness

Effectively planning and, when necessary, managing emergencies that could result from a range of potential hazards within a large, remote, and environmentally sensitive region requires (1) a good understanding of conditions that affect the NERR and (2) close coordination among response agencies. The NCNERR relevant site manager or other designated staff monitors information pertinent to a potential or actual emergency. When an emergency occurs, the Reserve Manager (Emergency Manager) performs initial notification and coordination tasks. The relevant site manager or other designated staff assumes the monitoring and notification responsibilities during periods when the Emergency Manager is absent.

When the pace of emergency operations requires a distribution of workload, the NCNERR Manager may elect to assign a Duty Officer. The NERR Manager assigns this role and manages the rotation schedule with input from the Central Sites Manager (Emergency Preparedness Coordinator). During these times, the Duty Officer maintains contact with pre-identified members of the NERR and response community. Remaining in contact means that the Duty Officer has at least two methods of viable communication available at any one time. Forms of communication include land-line telephone, cellular telephone, smart phone, or conventional radio. E-mail is not considered one of two required forms of communication unless linked to a smart phone that is enabled to alert on receipt of an email.

When information received or identified through this monitoring warrants notification of others, the Emergency Manager or Duty Officer uses the NCNERR **Emergency Contact List** **(Appendix B)** to carry out notifications. Under the general direction of the NERR Manager, the Duty Officer may also support initial response and coordination activity.

Sources of information for maintaining situational awareness include: weather forecasts, weather alert notifications, weather radio information, NOAA web sites, U.S. Geological Survey (USGS) web sites, and other relevant web sites (for example, County or local emergency management agency notifications or web sites).

3.3.4 Roles, Responsibilities, and Assignments

Management of an emergency that has occurred (or is about to occur) may involve any one of five roles for the NERR, depending on the nature of the emergency and the capability of the NERR. Potential roles include the following:

- Calling for assistance and taking actions to stabilize an emergency within the Reserve until emergency response organizations arrive and assume Incident Command.
- Serving as a technical specialist (e.g., natural resource impacts, GIS data, System-wide monitoring and biological data, etc.) or field responder (e.g., wildland firefighter) within an Incident Command or Unified Command (UC) led by another agency.
- Serving as Incident Commander for NERR-led responses (e.g., hurricane/severe storm, Type 4 or 5 incidents at the Reserve).
- Supporting an incident outside the NERR by providing specific capabilities to support the IC/UC (see Appendix C, Emergency Capability Catalog).

Generally, responsibility for managing an incident falls on the organization with jurisdiction, authority, and the ability to respond. Table 11 shows the likely role of the NERR for the anticipated range of hazards at the Reserve. Within its capabilities, the NERR will take actions to stabilize an incident as much as possible while awaiting the arrival of emergency responders. For events led by the NERR, the NERR Manager will be the person in charge of the incident and will select a location such as the NCNERR Headquarters Office or a boat/vehicle from which operations will be directed.

Table 11 - Lead and Supporting Agency Roles for NERR Hazard Events

Events/Hazards within NERR	Lead Agency	NERR Role
Hurricane (NERR property only)	County EMA	Incident Commander for NERR property
Coastal Erosion	USACE and DCM	Cooperating or assisting agency
Severe Storms (NERR property only)	County EMA	Incident Commander for NERR property
Oil Spill	NCDENR, Coast Guard or NCDPS	Cooperating or assisting agency
Riverine Flooding	County EMA	Cooperating or assisting agency
Harmful Algal Bloom	NCDMF	Cooperating or assisting agency
Vessel Grounding	Coast Guard or WRC	Cooperating or assisting agency
Hazardous Material (Hazmat) (other than oil)	NCDENR, Coast Guard, or NCDPS	Cooperating or assisting agency
Lightning	Fire Dept.	Cooperating or assisting agency
Wildland Fire	Fire Dept. or NC Forest Service	Cooperating or assisting agency
Tornado	County EMA	Cooperating or assisting agency
Tsunami	County EMA	Cooperating or assisting agency
Earthquake	County EMA	Cooperating or assisting agency
Aircraft Crash	Fire Dept.	Cooperating or assisting agency
Rail Hazmat	Fire Dept.	Cooperating or assisting agency
Law Enforcement Emergency	Sheriff's Office	Cooperating or assisting agency
Medical Emergency	EMS	Cooperating or assisting agency
Structure Fire	Fire Dept.	Cooperating or assisting agency
Unexploded Ordnance (UXO)/Live Fire	Sheriff's Office	Cooperating or assisting agency

Since NIMS is flexible and scalable, the NERR Incident Commander will establish the functional positions needed for each particular incident. Figure 14 is an example of how the NERR might organize for a localized Type 4 or 5 incident requiring only an Incident Commander and Operations Section Chief along with field teams.

Figure 14 –Typical NERR-led Incident Response for a Hurricane

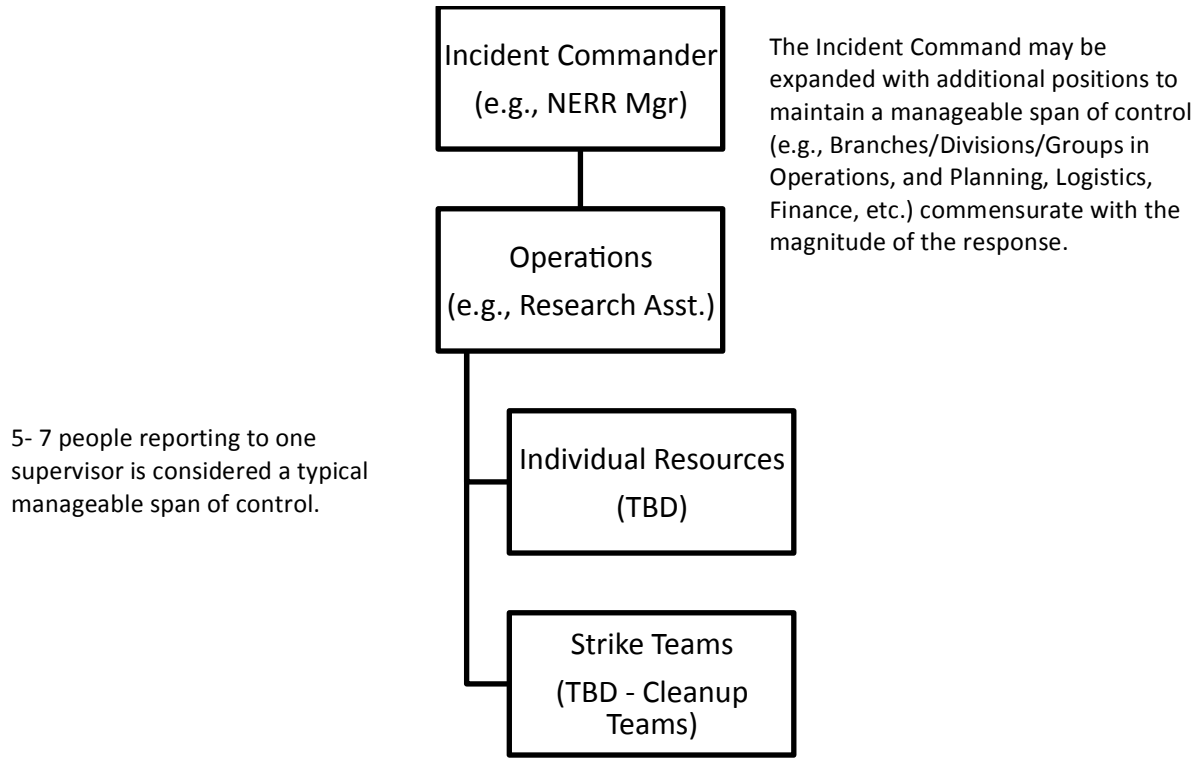
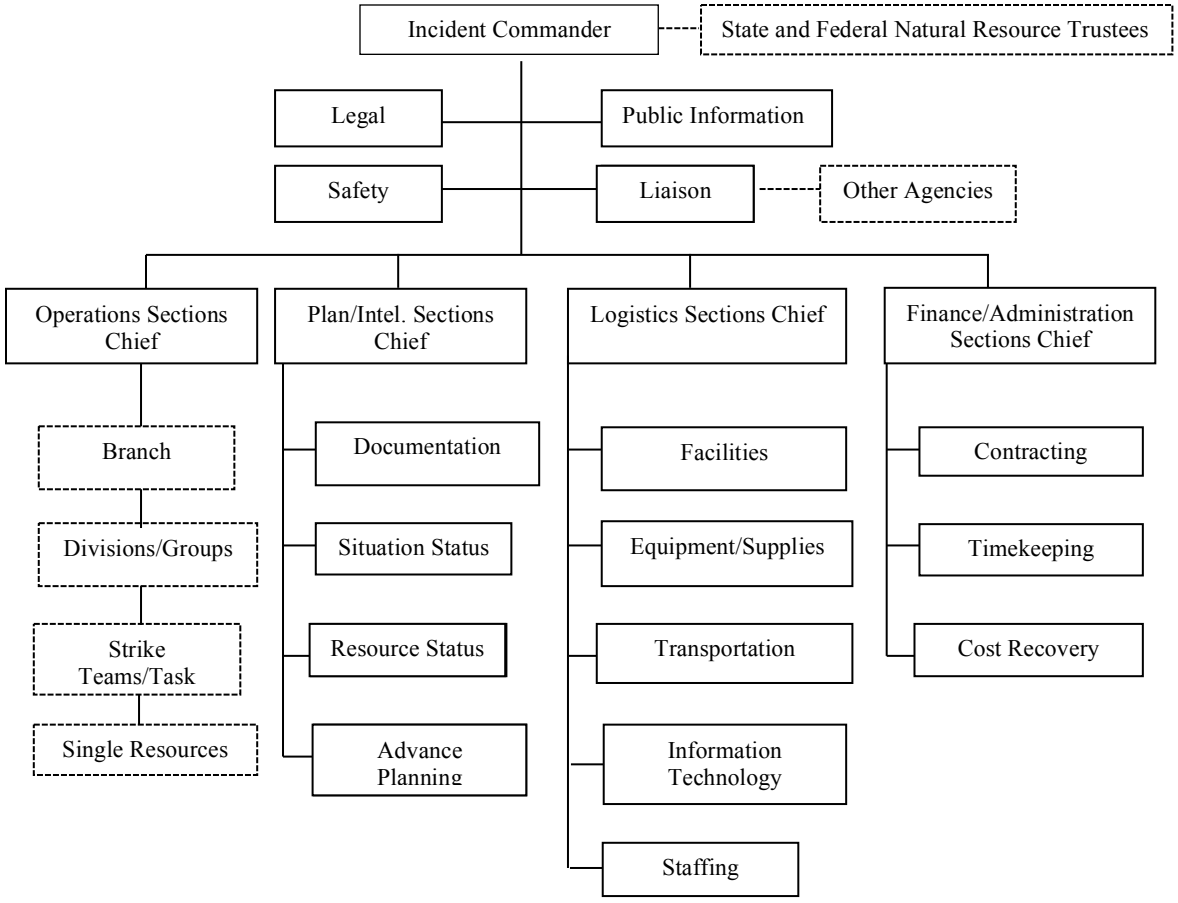


Figure 15 shows a typical expanded NIMS organizational model for larger and more complex events requiring multi-agency staffing. Such an event would be led by the appropriate emergency response agency and a qualified Type 1, 2, or 3 Incident Commander. NERR staff in that event might fill technical specialist positions for scientific research and environmental impacts; provide input through the lead State Trustee agencies or Liaison Officer; or support Operations, Planning, or Logistics sections based on the specific capabilities and qualifications they bring to the event.

Figure 15 – NIMS Expanded Organizational Chart



Note: Within the National Incident Management System (NIMS), one person can function in several roles. Abbreviations: TBD = to be determined. NOAA = National Oceanic and Atmospheric Administration.

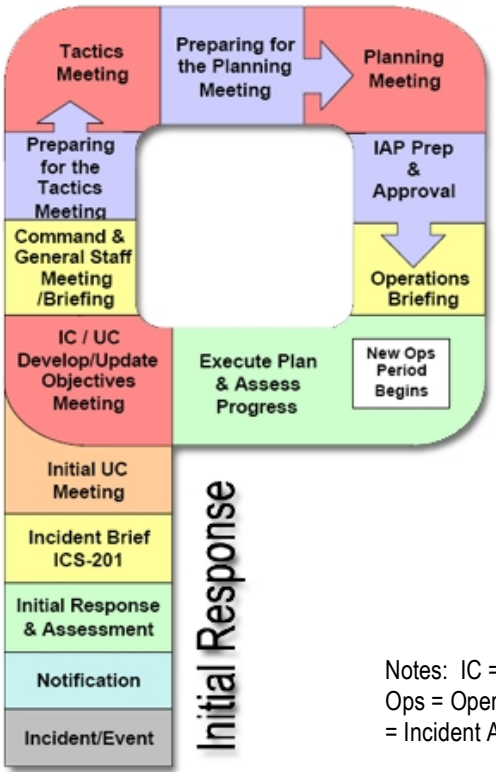
3.3.5 Priorities and Action Planning

Effective response results from establishing priorities, developing incident action plans (IAP), and carefully executing plans. Generally, NERR priorities during an emergency or disaster involve protection of the following elements:

1. Life
2. Human health and safety
3. Property, especially critical infrastructure
4. The environment
5. Economic interests

The NERR provides particular knowledge and capabilities to support environmental protection activities. The general ICS/NIMS process for managing response is illustrated with a tool called the "Planning P," as shown in Figure 16.

Figure 16– ICS/NIMS Planning P



Notes: IC = Incident Command; UC = Unified Command; Ops = Operations; ICS = Incident Command System; IAP = Incident Action Plan

3.3.6 Communications

Communications affect emergency management outcomes. To ensure effective internal and external communications, the NERR will maintain all of the following forms of communication. This capability will be tested on a quarterly basis, as deemed necessary.

- Two lines of commercial land-line telephone (one line for Kitty Hawk)
- One commercial Internet connection
- At least two marine Very High Frequency (VHF) radios
- One dedicated fax line (no fax for Kitty Hawk)
- Cell phones (work cell phones are provided for the Kitty Hawk and Beaufort office)

3.3.7 Information Sharing

During an emergency, sharing information with agencies, government leaders, and the public is an important part of response. For public communication, Michele Walker, Public Information Officer, will make a press release available from NC DENR Environmental Education and Public Affairs. She can be reached at Michele.walker@ncdenr.gov and 919-707-8604. To assist in communicating with parties supporting the response (e.g., NERR personnel, NCDCM personnel, or other parties), the Situation Report or ICS Form 201 included in Appendix J may be used. When supporting a response managed by others, forms similar to those identified in the FEMA Standard Operating Procedures cited in the references will be used (FEMA 2010).

3.3.8 Emergency Capabilities

Emergency capabilities include people, facilities, systems, equipment, and supplies needed to respond to an emergency. Effectively managing capabilities during a disaster is critical to success. Failure to fill capability requests can lead to serious negative impacts.

When an emergency or disaster occurs, the NERR acts as follows using general and hazard-specific procedures (Appendices A and D):

1. **Evaluate information provided by the NERR Manager, Emergency Preparedness Coordinator, or other source to decide whether to respond or call for assistance.**
2. **Notify NERR staff (Appendix B, Emergency Contact List) and other relevant agencies of Reserve status and intended action.**

3. **Recall staff to perform emergency functions, as appropriate.**
4. **If it can be done safely, implement any emergency actions to stabilize the situation until outside assistance arrives.**
5. **For off-site events, deploy appropriate personnel to another location (as appropriate).**

The NERR will follow NCDCM guidance to request additional agency capabilities and support, when needed. Typically, this involves an e-mail or telephone call to the NCDCM Director; however, in large disasters lead agencies may establish more formalized NIMS "Resource Request" processes for the NERR.

If the NERR receives a Resource Request from another agency during an emergency, the NERR Manager will attempt to fulfill the request using its available emergency capabilities; the NERR Manager will consult with the NCDCM Director prior to making such a commitment or as soon as it is practicable to do so.

3.4 Recovery

Recovery is the process of returning an area affected by an emergency to normal conditions. Recovery may sometimes occur in a matter of hours—for example, restoration of electricity and telephone service. Following disasters, complete recovery can take years. Two keys to effective recovery are to complete a plan for recovery before an emergency occurs and to begin recovery as soon as possible.

Appropriate recovery activities will depend on the circumstances of each emergency. In large-scale disaster response coordination, NIMS establishes the County Emergency Management Agency or ICP Planning Section as the responsible section for initiating recovery; however, in a NERR-only emergency, recovery planning would be implemented by Reserve personnel. During a regional emergency or disaster involving the NERR, Reserve staff would likely provide support to another ICP planning section, probably serving as Technical Specialists in that section.

3.4.1 Damage Assessment

Damage assessment involves identifying, recording, compiling, and analyzing damage information to determine what recovery action and assistance may be needed. Following major disasters, a process known as a Preliminary Damage Assessment (PDA) is used by FEMA and the states to determine needs and to what extent state and federal assistance may be available. States can assist with the FEMA recovery process typically used to recover overtime, the cost of rebuilding infrastructure, and other costs

associated with disaster. Information is available at: http://www.fema.gov/public-assistance-preliminary-damage-assessment.

When injuries to natural resources are caused by oil or chemical spills, the NRDA process may apply. Concurrent with, but separate from, the initial response to protect life and property, natural resource trustee agencies such as NOAA and the U.S. Fish and Wildlife Service (FWS) and affected states initiate a NRDA. The NRDA determines the type and extent of injury to natural resources, the strategies necessary for recovery, and the estimated cost and schedule for recovery. The NRDA characterizes pre-spill (baseline conditions) so that financial damages can be assessed to the party responsible for the spill and resulting injury to natural resources. The NRDA process does not apply to injury caused by natural disasters (such as hurricanes), but may apply to oil or chemical releases resulting from a natural disaster. The NRDA process will be led by a group of natural resource trustees known as the Trustee Council, which may include federal and state natural resource agencies such as the NCDENR. NCNERR staff may support NRDA efforts. The trustees work in parallel with the USCG or EPA ICs during the initial stages of a major spill, then continue data collection after the cleanup to document residual injuries to natural resources. Whereas the initial incident response may wind down after a few weeks or months, it may take years to collect the data necessary to support a NRDA claim. As appropriate, NERR staff may contribute to the NRDA process by collecting baseline environmental data before or following a hazard event.

3.4.2 Short-Term Recovery

Establishing priorities is just as important in recovery as in response; priorities help to guide and achieve a timely and orderly return to pre-disaster conditions. NERR-specific recovery activities after response are managed by the NERR Manager. These short-term recovery objectives typically include the following:

- Implementing immediate environmental protection measures.
- Restoring monitoring infrastructure and real-time telemetered data streams
- Opening access routes
- Securing damaged areas for safety
- Removing Hazmat and debris
- Accomplishing cost recovery
- Establishing long-term recovery objectives
- Completing a damage assessment

3.4.3 Long-Term Recovery

Long-term recovery objectives are generally not met until long after a response is completed. Long-term recovery activities include the following:

- Restoring the natural environment (i.e., removing hazards to navigation and wildlife)
- Rebuilding infrastructure (i.e., boardwalks, interpretative signs)
- Replacing lost equipment and supplies (i.e., water monitoring stations, boats)
- Monitoring the environment for signs, and effects, and success of recovery.

The NERR Manager is responsible for coordinating long-term recovery activity at the Reserve.

4.0 Continuity of Operations

Emergencies can threaten to destroy or delay the NERR's ability to provide essential services and continuity of research programs. Therefore, the NERR also develops a Continuity of Operations Plan (COOP) that includes the following:

- A line of succession for department leadership
- A list of essential services (including research), tolerances for interruption, and strategies to maintain continuity
- Assignment of responsibility for continuity activity
- Plan to preserve vital records, including historical research data, and a strategy for ensuring access to these following an emergency.

Because continuity of operations is vital to natural resource protection efforts, the NERR incorporates continuity of operations objectives in emergency planning, training, and exercise work. Roles, processes, and tools to ensure NERR continuity of operations are described further in Appendix E – Continuity of Operations.

5.0 Plan Maintenance

This DRP will be maintained by the NCNERR and reviewed by the ET annually. As changes are needed to the plan or its appendices, the NERR Manager will assign this work to one or more ET members and provide the support necessary to accomplish that work.

The NERR may participate in outside exercises or trainings, including those that involve interagency coordination. Exercises may include drills, workshops, or table-top, functional, and full-scale exercises. Appendix I addresses training and exercise recommendations and plans. Appendix I - Emergency Training Plan will be used to coordinate training and exercise efforts at the Reserve.

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Appendices

Appendix A - General Response Procedure

Appendix B - NCNERR Emergency Contact List

Appendix C – NCNERR Emergency Capability Catalog

Appendix D - Hazard-Specific Procedure

Appendix E - Continuity of Operations Planning (COOP)

Appendix F - Hazard Identification and Risk Assessment Tool

Appendix G - Response Planning Stakeholder List

Appendix H - Annual Work Plan

Appendix I - Emergency Training Plan

Appendix J - Forms and Tools

Appendix K - Maps and Other Information

Appendix L - References

Appendix M - Glossary

Appendix A - General Response Procedure

Appendix B – NCNERR Emergency Contact List

Currituck Banks Reserve:

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
Scott Crocker	NCNERR	Northern Sites Manager	983 W. Kitty Hawk Road Kitty Hawk, NC 27949	252-261-8891		Scott.Crocker@ncdenr.gov	
EXTERNAL NOTIFICATIONS AND PRIMARY CONTACTS							
Duty Officer	**Public Safety Answering Point**	**Not applicable (NA)**	**NA**	**911**	**NA**	**NA**	**Note: 911 Is the first contact for most emergency/ disaster notifications at the NCNERR.**
NA	National Response Center	NA	c/o United States Coast Guard (CG-5335)-Stop 7581, 2100 2nd Street, SW Washington, DC 20593-0001	800-424-8802	NA	http://www.nrc.uscg.mil/ (website, online incident reporting tool); Duty officer Email: HQS-DG-lst-NRCINFO@uscg.mil	For oil spill, hazmat, and America Waterways Watch notifications
Mary Beth Newns	Currituck County Emergency Management Department	Emergency Management Director	153 Courthouse Rd., Suite 122 Currituck, NC 27929	252-232-2115, ext. 6013		Mary.Newns@CurrituckCountyNC.gov	
Susan D. Johnson	Currituck County Sheriff's Office	Sheriff	407 Maple Road Maple, NC 27956	252-453-8204		Susan.Johnson@CurrituckCountyNC.gov	
Robert Glover	Currituck County Fire – Emergency	Chief	153 Courthouse Road, Suite 303 Currituck, NC	252-232-7746			

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
Galganski	Volunteer Fire and Rescue		Drive Corolla, NC 27927			escue.com	
Richard Bandy	National Weather Service	Meteorologist-in-Charge (MIC)	US Dept. of Commerce National Oceanic and Atmospheric Administration National Weather Service Newport/Morehead, NC 533 Roberts Rd Newport, NC 28570	252-223-5122 ext. 222		richard.bandy@noaa.gov	
	USCG Elizabeth City		SUPCEN Building 53 1664 Weeksville Road Elizabeth City, North Carolina 27909	910-362-4015			
Frank Jennings	NCDENR DCM Elizabeth City Regional Office	District Manager	1367 U.S. 17 South Elizabeth City, NC 27909	252-264-3901		Frank.Jennings@ncdenr.gov	
Mike Petruncio	North Carolina Forest Service	District Seven Forester	861 Berea Church Road Elizabeth City, NC 27909-7303	252-331-4781		mike.petruncio@ncagr.gov	
David May	NCDENR DWR Washington Regional Office	Water Quality Program Regional Supervisor	943 Washington Square Mall Washington, NC 27889	252-946-6481 Emergency Hotline – 1-800-858-0368		david.may@ncdenr.gov	
Peter Bishop	Currituck County Regional	Manager	153 Courthouse Road Currituck, NC	252-232-6015		Peter.Bishop@CurrituckCountyNC.gov	

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
	Airport		27929				

Rachel Carson Reserve:

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
Rebecca Ellin	NCNERR	Reserve Program Manager	101 Pivers Island Road Beaufort, N.C. 28516	910-665-9757		rebecca.ellin@ncdenr.gov	
Paula Gillikin	NCNERR	Central Sites Manager	101 Pivers Island Road Beaufort, N.C. 28516	252-838-0886		paula.gillikin@ncdenr.gov	
Whitney Jenkins	NCNERR	Coastal Training Coordinator	101 Pivers Island Road Beaufort, N.C. 28516	252-838-0882		whitney.jenkins@ncdenr.gov	
Brandon Puckett	NCNERR	Research Coordinator	101 Pivers Island Road Beaufort, N.C. 28516	252-838-0851		Brandon.puckett@ncdenr.gov	
Lori Davis	NCNERR	Education Coordinator	101 Pivers Island Road Beaufort, N.C. 28516	252-838-0883		Lori.davis@ncdenr.gov	
Kevin McVerry	NCNERR	GIS Specialist	101 Pivers Island Road Beaufort, N.C. 28516	252-838-0881		Kevin.mcverry@ncdenr.gov	
Emily Woodward	NCNERR	Communications Specialist	101 Pivers Island Road Beaufort, N.C. 28516	252-838-0887		Emily.woodward@ncdenr.gov	
EXTERNAL NOTIFICATIONS AND PRIMARY CONTACTS							

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
Duty Officer	**Public Safety Answering Point**	**Not applicable (NA)**	**NA**	**911**	**NA**	**NA**	**Note: 911 Is the first contact for most emergency/ disaster notification s at the NCNERR.**
NA	National Response Center	NA	c/o United States Coast Guard (CG-5335)-Stop 7581, 2100 2nd Street, SW Washington, DC 20593-0001	800-424-8802		http://www.nrc.uscg.mil/ (website, online incident reporting tool); Duty officer Email: HQS-DG-lst-NRCINFO@uscg.mil	For oil spill, hazmat, and America Waterways Watch notifications
Jen Sawyer	Carteret County Emergency Services	Emergency Management Coordinator	3820 Bridges St. Suite D Morehead City, NC 28557	252-222-5841		Jen.sawyer@carteretcountync.gov	
Lauren Hermley	Town of Beaufort	Assistant Town Manager	701 Front St., Beaufort NC 28516	252-728-2141		l.hermley@beaufortnc.org	
Steve Lewis	Town of Beaufort	Police Chief	215 Pollock St., Beaufort, NC 28516	252-728-4561		S.Lewis@beaufortnc.org	
Larry Fulp	Town of Beaufort	Fire Chief	900 Cedar St., Beaufort, NC 28516	252-728-4325		l.fulp@beaufortnc.org	
Asa Buck, III	Carteret County Sheriff's Office	Sheriff	304 Craven St. P.O. Drawer 239 Beaufort, NC 28516	252-728-8400		asab@carteretcountync.gov	
Eddie Lewis	Carteret County Fire	Fire Marshal	3820 Bridges St. Suite D Morehead City, NC 28557	252-222-5841		eddie.lewis@carteretcountync.gov	
Richard	National	Meteorologist-	US Dept. of	252-223-5122		richard.bandy@noaa.g	

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
Bandy	Weather Service	in-Charge (MIC)	Commerce National Oceanic and Atmospheric Administration National Weather Service Newport/Morehead, NC 533 Roberts Rd Newport, NC 28570	ext. 222		ov	
	USCG Ft. Macon		USCG Station Fort Macon 2301 East Fort Macon Road Atlantic Beach, NC 28512	252-247-4583			
Roy Brownlow	NCDENR DCM Morehead City Office	District Manager/ Compliance Coordinator	400 Commerce Avenue Morehead City, NC 28557	252-808-2808		Roy.Brownlow@ncdenr.gov	
Andy Meadows	North Carolina Forest Service	District Four Forester	3810 M. L. King Jr. Blvd. New Bern, NC 28562-2236	252-514-4764		andy.meadows@ncagr.gov	
Jim Gregson	NCDENR DWR Wilmington Regional Office	Program Supervisor	127 Cardinal Drive Extension Wilmington, NC 28405	910-796-7215 Emergency Hotline - 1-800-858-0368		Jim.gregson@ncdenr.gov	

Masonboro and Zeke's Islands Reserves:

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
NERR EMERGENCY CONTACTS (use the NERR Emergency Contact List to notify activate staff for emergency or disaster)							
Hope Sutton	NCNERR	Stewardship Coordinator and Southern	910-962-2998			suttonh@uncw.edu	

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
		Sites Manager					
Byron Toothman	NCNERR	Research Biologist	5600 Marvin K. Moss Lane Wilmington, NC 28409	910-962-2334		toothmanb@uncw.edu	
Heather Wells	NCNERR	Research Biologist	5600 Marvin K. Moss Lane Wilmington, NC 28409	910-962-2335		wellsh@uncw.edu	
Marie Davis	NCNERR	Education Specialist	5600 Marvin K. Moss Lane Wilmington, NC 28409	910-962-2324		Marie.davis@ncdenr.gov	
EXTERNAL NOTIFACTIONS AND PRIMARY CONTACTS: NEW HANOVER COUNTY							
Duty Officer	**Public Safety Answering Point**	**Not applicable (NA)**	**NA**	**911**	**NA**	**NA**	**Note: 911 Is the first contact for most emergency/ disaster notifications at the NCNERR.**
NA	National Response Center	NA	c/o United States Coast Guard (CG-5335)-Stop 7581, 2100 2nd Street, SW Washington, DC 20593-0001	800-424-8802	NA	http://www.nrc.uscg.mil/ (website, online incident reporting tool); Duty officer Email: HQS-DG-lst-NRCINFO@uscg.mil	For oil spill, hazmat, and America Waterways Watch notifications
Warren Lee	New Hanover County Emergency Management	Emergency Management Director	230 Government Center Drive, Suite 115 Wilmington, NC 28403	910 798-6900		wlee@nhcgov.com	
Ed McMahon	New Hanover County	Police Chief	3950 Juvenile Center Road Castle Hayne, NC	910-798-4200		emcmahon@nhcgov.com	

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
	Sherriff's Office		28429				
Donnie Hall	New Hanover County Fire	Fire Chief	230 Government Center Drive, Suite 130 Wilmington, NC 28403	(910) 798-7420		dhall@nhcgov.com	
Steve Pfaff	National Weather Service	Warning Coordination Meteorologist	2015 Gardner Drive Wilmington, NC 28405	910-762-0524 ext. 223		steven.pfaff@noaa.gov	
	USCG Wrightsville Beach		912 Water Street Wrightsville Beach, NC 28480	910-256-4224 (non emergency) 910- 362-4015 (24-hour line for emergencies)			
Debbie Wilson	NCDENR DCM Wilmington Regional Office	District Manager	127 Cardinal Drive Ext. Wilmington, NC 28405-3845	910-796-7266		Debra.wilson@ncdenr.gov	
Bill Walker	North Carolina Forest Service	Cape Fear Area Ranger	1815 Gardner Drive Wilmington, NC 28405	910-251-5750		Bill.walker@ncagr.gov	
Jim Gregson	NCDENR DWR Wilmington Regional Office	Program Supervisor	127 Cardinal Drive Extension Wilmington, NC 28405	910-796-7215 Emergency Hotline - 1-800-858-0368		Jim.gregson@ncdenr.gov	
EXTERNAL NOTIFACTIONS AND PRIMARY CONTACTS: BRUNSWICK COUNTY							
Duty Officer	**Public Safety Answering Point**	**Not applicable (NA)**	**NA**	**911**	**NA**	**NA**	**Note: 911 Is the first contact for most emergency/ disaster notification s at the**

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
							NCNERR.
NA	National Response Center	NA	c/o United States Coast Guard (CG-5335)-Stop 7581, 2100 2nd Street, SW Washington, DC 20593-0001	800-424-8802	NA	http://www.nrc.uscg.mil/ (website, online incident reporting tool); Duty officer Email: HQS-DG-lst-NRCINFO@uscg.mil	For oil spill, hazmat, and America Waterways Watch notifications
Brian Watts	Brunswick County Emergency Services	Director of Emergency Services	3325 Old Ocean Hwy.,Building C, Bolivia, NC	910 -253-5383		director@brunswickes.com	
Scott Carner	Brunswick County Emergency Services	Fire Marshal	3325 Old Ocean Hwy.,Building C, Bolivia, NC	910 -253-5383		fire@brunswickes.com	
John Ingram	Brunswick County Sheriff's Office	Sheriff	PO Box 9 / 70 Stamp Act Drive Bolivia, NC 28422	910-253-2736		bthboling@gmail.com (Assistant to the Sheriff)	
Bill Walker	North Carolina Forest Service	Cape Fear Area Ranger	1159 Green Swamp Road Supply, NC28462	910-755-7772		Bill.walker@ncagr.gov	
Steve Pfaff	National Weather Service	Warning Coordination Meteorologist	2015 Gardner Drive Wilmington, NC 28405	910-762-0524 ext. 223		steven.pfaff@noaa.gov	
	USCG Wrightsville Beach		912 Water Street Wrightsville Beach, NC 28480	910-256-4224 (non emergency) 910- 362-4015 (24-hour line for emergencies)			
Debbie Wilson	NCDENR DCM Wilmington Regional Office	District Manager/	127 Cardinal Drive Ext. Wilmington, NC 28405-3845	910-796-7266		Debra.wilson@ncdenr.gov	
Jim Gregson	NCDENR DWR Wilmington	Program Supervisor	127 Cardinal Drive Extension Wilmington, NC	910-796-7215 Emergency Hotline - 1-800-		Jim.gregson@ncdenr.gov	

Name	Agency	Title/Role	Office Location	Office Phone	Work Cell	Work Email	Notes
	Regional Office		28405	858-0368			

Appendix C – NCNERR Emergency Capability Catalog

Resource	Description	Location
Office Space	900 square foot office, field and office storage space, common meeting space for up to 6 people, 4 work stations, boat and vehicle storage, offsite laboratory space at UNC-Coastal Studies institute	Northern Sites Office in Kitty Hawk (Currituck Banks)
	2,405 square feet of office space in CCFHR-NCNERR Administration building, teaching laboratory space, auditorium, large conference room, 8 offices, 2 cubicles, reception area, small conference room	Headquarters Office in Beaufort (Rachel Carson)
	1,450 sq. ft. of office space at UNCW Center for Marine Science (CMS), 4 offices, large laboratory, common area/workspace, storage area/mud room	Southern Sites Office in Wilmington (Masonboro and Zeke's Islands)
Equipment	Laptop computers, projectors and slide show software, geographic information system (GIS)/Global Positioning System, tools for land management and maintenance	Northern Sites Office in Kitty Hawk (Currituck Banks)
	Laptop computers, projectors and slide show software, copiers, color printers, plotter, water quality data loggers, geographic information system (GIS)/Global Positioning System, tools for land management and maintenance	Headquarters Office in Beaufort (Rachel Carson)
	Laptop computers, projectors and slide show software, color printers, plotter, water quality and meteorological data loggers, auto samplers, telemetry equipment, geographic information system (GIS)/Global Positioning System, tools for land management and maintenance	Southern Sites Office in Wilmington (Masonboro and Zeke's Islands)
Vehicles	2007 4WD Jeep Grand Cherokee	Northern Sites Office in Kitty Hawk (Currituck Banks)
	2007 4WD Dodge Durango	Headquarters Office in Beaufort (Rachel Carson)
	4WD Dodge Durango	Southern Sites Office in Wilmington (Masonboro and Zeke's Islands)

Resource	Description	Location
Boats	16’ Jones Brother semi-V hull equipped with a four-stroke 50 hp Johnson outboard engine.	Northern Sites Office in Kitty Hawk (Currituck Banks)
	17’ Jones Brother boat equipped with a Suzuki outboard motor 27’ Carolina Skiff boat equipped with a Yamaha outboard motor 2 kayaks	Headquarters Office in Beaufort (Rachel Carson)
	24’ Carolina Skiff boat equipped with a Yamaha outboard motor 19’ Jones Brother Bateau equipped with a Yamaha four-stroke 60 hp outboard engine 16’ Carolina Skiff outfitted with a Yamaha four-stroke 25 hp outboard engine 16’ aluminum Jon boat with a 15 hp Yahama four-stroke outboard engine Multiple kayaks	Southern Sites Office in Wilmington (Masonboro and Zeke’s Islands)
On-site Facilities	Concrete parking lot, 1/3 mile boardwalk, plant and tree identification signs, interpretive signs, 1.5 mile primitive trail with benches, North Beach Access ramp managed by Currituck County	Northern Sites Office in Kitty Hawk (Currituck Banks)
	One mile primitive loop interactive trail, 500 ft. boardwalk across from the Town of Beaufort public boat ramp, interpretative signs	Headquarters Office in Beaufort (Rachel Carson)
	Masonboro Island – Currently no on-site facilities Zeke’s Island – Interpretive signage, rock jetty	Southern Sites Office in Wilmington (Masonboro and Zeke’s Islands)

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Appendix D – Hazard-Specific Procedures

Hazard-specific procedures are included for the following hazards ranked high or medium in the hazard identification and risk assessment. Some hazards have been combined where response procedures are similar.

Note: For most emergencies, if you are not sure what to do, contact the Reserve Manager and call 9-1-1. The 9-1-1 Call Center will forward your need to the appropriate entity if you are not sure.

This section contains emergency procedures for the following hazards:

1. Hurricane
2. Severe Storms (Including Lightning/Tornado)
3. Vessel Grounding
4. Coastal Erosion
5. Invasive Species
6. Harmful Algal Bloom (HAB)
7. Wildland Fire
8. Medical/Rescue and Law Enforcement Emergency
9. Riverine Flooding
10. Oil Spill/Hazmat Materials Spill
11. Aircraft Crash

Hazard 1 - Hurricane

Scenario: **Hurricane**

What you Should Do:

NC Coastal Reserve Pre-Hurricane Checklist
2015

1. Make backups of your hard drive files and take home with you
2. Unplug all electronics
3. Move electronic equipment (*e.g.* computers) away from windows
4. Cover equipment with tarps or trash bags, if deemed appropriate
5. Close but do not lock interior office doors on departure
6. Elevate items on 1st floor
7. Secure outdoor/shed items in office or other location
8. Check shed tie downs; add extra ones if needed
9. Trailer boats to a secure inland location, top-off gas, and tie down
10. Move State vehicles to higher ground and make sure they have a full tank of gas
11. Take pre-hurricane photos of the facilities and sites to document potential damage
12. Charge laptop PCs, digital cameras and cell phones – take with you
13. Keep a copy of the Reserve Emergency Contact List at home
14. Review your facility plan and DENR's Disaster Response Plan and Procedures Manual
15. Review insurance list to be sure all new assets are on it
16. Remove all food from refrigerators and freezers
17. Ensure frozen or cold samples are in a backup power fed freezer/fridge, if possible

Beaufort

1. Backup server, move to safe location, and take tapes with you
2. Paula will lead the effort to secure the boats and vehicles and will work with Brian and Annie at NOAA to do so. For category 1 or 2 hurricane, move the boats to the quadrangle. For category 3 or greater hurricane, move vehicles and boats to the National Weather Service location in Newport (From Pivers Island head north on US 70 W to Newport; turn left onto Roberts Road; NWS is at 477 Roberts Road). Park in the center of the designated spaces and use the 4 earth anchors to tie down the vessel
3. Move boat gasoline tanks outside of boat to a safe location
4. Lori will lead the effort to secure the shed and nearby equipment
5. Conduct a pre-hurricane horse census. Note: This will be conducted at Paula's discretion.
6. Secure or remove vulnerable equipment and/or infrastructure at the Rachel Carson site
7. Check the latch on the exterior office doors on 2nd floor so they do not

blow open
8. Inform your supervisor or Rebecca Ellin of your whereabouts and contact information during the event
9. Take with you a copy of the NOAA Hurricane Plan (Rev. May 25, 2011)
10. Take a copy of the DCM Disaster Response Plan and Procedures Manual

Wilmington

1. Backup desktops to RAID array and take array with you
2. Follow the guidance of UNCW/CMS as to where to move vehicles and boats.
3. Submit list of employees to Daniel Baden (Director of CMS) for emergency access following the storm
4. Follow the guidance of UNCW/CMS facility administrators about returning to the facility and returning to work
5. Inform your supervisor or Rebecca Ellin of your whereabouts and contact information during the event
6. Take a copy of the DCM Disaster Response Plan and Procedures Manual

Kitty Hawk

1. Move vehicle and boat to Kitty Hawk Town Hall, 101 Veterans Memorial Drive (From DCM office turn east onto W. Kitty Hawk Rd., then left onto Shelby Ave., then left onto Veterans Memorial Dr.)
2. Maintain contact with Town of Kitty Hawk officials
    a. Willie Midget, Public Works: 252-202-6202 (cell)
    b. Chief Johnson, Police; 252-202-8132 (cell)
3. Inform your supervisor or Rebecca Ellin of your whereabouts and contact information during the event
4. Take a copy of the DCM Disaster Response Plan and Procedures Manual

Post-Hurricane

1. Activate NC Coastal Reserve Emergency Contact List immediately after the storm and report safety of employees to Rebecca
2. Every 24 hours Rebecca needs an update on facilities, sites, and vehicles
3. Contact facility or town officials to assist with cleanup
4. Be prepared to operate under altered office conditions
5. Conduct post-site assessments as soon as safely possible
6. Beaufort Office: Follow the guidance of NOAA facility administrators about returning to the facility and returning to work
7. Wilmington Office: Follow the guidance of UNCW/CMS facility administrators about returning to the facility and returning to work

8. Kitty Hawk and Columbia Offices: Return to work as soon as it is safe to do so

Where you can find more information:

1. Review NOAA Severe Weather Fact Sheet for your area (North Carolina): http://www.ncddc.noaa.gov/activities/weather-ready-nation/newis/
2. Review NCDPS Hurricanes website updates and resources: https://www.ncdps.gov/index2.cfm?a=000003,000010,000025,000185
3. Find more information on Home and Family Preparedness Planning at: http://www.redcross.org/prepare/location/home-family/plan
4. Find information on hurricane preparedness at: http://www.ready.gov/hurricanes
5. Find information on selecting a safe refuge in buildings at: http://www.fema.gov/library/viewRecord.do?id=1563
6. Find information on securing buildings from high winds at: http://www.fema.gov/library/viewRecord.do?id=3263.

Hazard 2 – Severe Storms (Including Lightning/Tornado)

Scenario: **Severe Storms**

What you should do:

1. Monitor NOAA weather briefings/radio and/or other local weather forecasts for severe storm warnings.
2. Notify all NCNERR staff of storm warning using radio, e-mail, Emergency Contact List, and direct communication.
3. Recall staff in the field or on the water to safe shelter.
4. If time permits before storm arrival:
    a. Secure all loose outside equipment.
    b. Secure boats at docks, on lifts, or trailers with additional tie-down or mooring lines.
    c. Charge cell phones and portable radios.
    d. Unplug all non-essential equipment.
    e. Back-up research server.
5. Ensure all staff and visitors take shelter during periods of severe storm/lightning/tornado.
6. After the storm passes:
    a. Account for all NCNERR staff and visitors.
    b. Check for injuries. Do not attempt to move seriously injured people unless they are in immediate danger of further injury. Request emergency medical assistance via 9-1-1. Provide first aid/CPR for injured personnel.
    c. Inspect site infrastructure, research and other equipment for damage.
    d. Initiate clean-up and repairs.
7. Document all injuries and damages for potential legal claims or cost reimbursement.
8. Conduct incident debrief/lessons learned review and update this plan and training as necessary.

What you can do to reduce risk:

1. Ensure NC NERR Emergency Contact List (Appendix B) and Employee Emergency Contact List (maintained by Safety Officer) are up-to-date.
2. Review the North Carolina DPS severe storm information (available at: https://www.ncdps.gov/Index2.cfm?a=000003,000010,000025).
3. Consider signing up for county-specific emergency notifications at:
    a. Carteret County: https://public.coderedweb.com/CNE/0DC4FFDC7074
    b. Currituck County: https://ww2.everbridge.net/citizen/logoutLogin.action?gis_alias_id=1480761

c. New Hanover County: https://nhcgov.onthealert.com/Terms/Index/?ReturnUrl=%2f
d. Brunswick County: https://alertregistration.com/BrunswickcountyNC/

4. Encourage staff to learn how to protect themselves in a tornado or thunderstorm/lightning storm (see references below.); periodically review hazard procedures for the Reserve with Reserve personnel.

Where you can find more information:

1. Review NOAA Severe Weather Fact Sheet for North Carolina: http://www.ncddc.noaa.gov/activities/weather-ready-nation/newis/
2. Review North Carolina DPS Hurricane Information and Situation Reports: https://www.ncdps.gov/Index2.cfm?a=000003,000010,000025,000185
3. Find information on Home and Family Preparedness Planning at: http://www.redcross.org/prepare/location/home-family
4. Find information on selecting a safe refuge in buildings at: http://www.fema.gov/library/viewRecord.do?id=1563
5. Find information on securing buildings from high winds at: http://www.fema.gov/library/viewRecord.do?id=3263.
6. Find information on Tornado Preparedness at http://www.ready.gov/tornadoes
7. Find information on Thunderstorm and Lightning Preparedness at: http://www.ready.gov/thunderstorms-lightning
8. Find information on lightning safety for boaters at: http://www.nws.noaa.gov/os/lightning/resources/LightningFactsSheet.pdf

Hazard 3 – Vessel Grounding

Scenario: **Vessel Grounding**

What you should do:

1. If a vessel is observed aground in the NCNERR:
    a. If a small pleasure craft, ask if they need assistance contacting the Coast Guard or a vessel towing service.
    b. For any large or commercial vessel, contact the Coast Guard on VHF- FM Marine Band Channel 16 or telephone U.S. Coast Guard Sector North Carolina at 910-362-4015.
    c. Provide as much information as is readily available:
    d. Vessel name, description, and location
    e. Number of persons on-board
    f. Signs of damage, fire, leaking oil, etc.
    g. Observed weather conditions
2. If oil or hazardous materials are observed leaking, notify the National Response Center at 1-800-424-8802 and the appropriate regional office of the NC Division of Water Resources. For Central and Southern sites, call: 910-796-7215; for Northern site, call 252-946-6481. If outside of normal business hours (M-F, 8-5), all sites should call the emergency hotline at 1-800-858-0368.
3. If directed, assign a Liaison Officer to the Coast Guard Incident Command.
4. Assist the Incident Commander as requested within NCNERR staff technical competencies.
5. Monitor for impacts to NCNERR natural resources. Report natural resource impacts to NCDCM.
6. Document all injuries and damages for potential legal claims or cost reimbursement.
7. Conduct incident debrief/lessons learned review and update this plan and training as necessary.

What you can do to reduce risk:

1. Participate in the Sector North Carolina Area Committee for oil/hazardous materials preparedness as time and resources permit.

Where you can find more information:

1. Review and update (as necessary) information on environmentally sensitive areas and protection strategies in USCG Sector North Carolina Area Contingency Plan at https://homeport.uscg.mil/mycg/portal/ep/portDirectory.do?tabId=1&cotpId=53
2. Find information on Federal Region IV regional response team protocols

for natural resource trustees, shoreline cleanup, and use of response technologies including dispersants, in-situ burning, and bioremediation at: http://www.rrt4.nrt.org/.

3. Review the Regional Response Team (Region IV) pamphlet, "Vessel Groundings in the Coastal Environment" and become familiar with associated contacts for North Carolina NERR area (NRC, USCG Marine Safety Office, etc.): http://www.nrt.org/production/NRT/RRTHome.nsf/resources/RRTIV-Pamphlets/$File/22_RRT4_Vessel_Grounding_Pamphlet.pdf
4. Read about seagrass impacts and restoration efforts following vessel groundings: http://sanctuaries.noaa.gov/science/conservation/ncontrol.html

Hazard 4 – Coastal Erosion

Scenario: **Coastal Erosion**

What you should do:

1. Monitor NCNERR for critical shore erosion following any severe storm, flood, or hurricane.
2. Notify the NCDCM Director of any shore erosion emergency or significant non-emergency shore erosion.
3. Close any NCNERR owned or managed structures in which shore erosion poses an imminent risk to life or health.

What you can do to reduce risk:

1. Identify and report any critical shoreline erosion within the NCNERR to the NCDCM.
2. Maintain the integrity of coastal dunes and vegetation.

Where you can find more information:

1. Find information on North Carolina's Coastal Zone Management Program at: http://portal.ncdenr.org/web/cm/coastal-area-management-act1
2. Review NOAA information on coastal erosion at: http://coastalmanagement.noaa.gov/hazards.html#erosion

Hazard 5 – Invasive Species

Scenario: **Invasive Species**

What you should do:

1. Determine whether this is an "incident" or an "issue."
    a. An incident is an isolated introduction of a species that has yet to become established in the ecosystem.
    b. An issue is ongoing challenge with an established nonindigenous species.
2. If an incident, notify NCDCM and establish Incident Command. If an "issue," continue to manage under on-going coastal management plan (e.g., spraying for invasive plants).
3. Develop a Rapid Response Plan or implement it (if already existing).
4. Obtain funding and establish agreements to execute the plan.
5. Streamline permit process.
6. Conduct training for team members.
7. Conduct education and outreach.
8. Implement species-specific eradication or control measures as identified in the Rapid Response Plan.
9. Conduct research for improved rapid response.
10. Revise the eradication or control measures based on research.
11. Conduct monitoring for effectiveness.
12. Demobilize when complete and monitor for species re-introduction.

What you can do to reduce risk:

1. Monitor NCNERR for introductions of invasive species.
2. Take note of invasive species sightings in adjacent land and water and block potential routes of introduction.
3. Monitor and take early action to control newly introduced species before they become established.
4. Conduct public outreach and education through on-going NCNERR programs to focus on preventing the introduction of invasive species into the NCNERR and surrounding environment.

Where you can find more information:

1. USDA National Invasive Species Information Center: http://www.invasivespeciesinfo.gov/aquatics/detection.shtml
2. US EPA Invasive Species: http://water.epa.gov/type/oceb/habitat/invasive_species_index.cfm
3. NOAA Aquatic Invasive Species: http://www.research.noaa.gov/research/2007/ais.shtml
4. Maryland Rapid Response Planning for Aquatic Invasive Species: http://www.mdsg.umd.edu/programs/gateway/invasives/rapidresponse/

Hazard 6 – Harmful Algal Bloom

Scenario: **Harmful Algal Bloom (HAB)**

What you should do:

1. Maintain awareness through direct observations and external HAB and water quality monitoring tools from NCDENR, including:
    a. North Carolina Fish Kill Events at: http://portal.ncdenr.org/web/wq/ess/fishkills
    b. North Carolina Recreational Water Quality Program information at: http://portal.ncdenr.org/web/mf/recreational-water-quality
2. In the event of a suspected HAB or fish kill, notify:
    a. NC Division of Water Resources at:
        i. Wilmington Regional Office: 910-796-7215
        ii. Washington Regional Office: 252-946-6481
3. Collect water and fish (kill) samples in accordance with standard protocol to validate observations and report results to Division of Water Resources. Note the location of concern and conditions (type of fish, water conditions, weather, etc.)
4. Consult the Shellfish Polluted Area Proclamations from the NCDENR DMF for shellfish closure status: http://portal.ncdenr.org/web/mf/proclamations-polluted-areas
5. Post any HAB warnings and alerts prepared by NC Division of Health and Human Services on the NCNERR website.
6. Provide personnel to support ongoing monitoring or documentation of HAB outbreak, if so directed by NCDCM or DWR. Provide consultation support, as directed by NCDCM, regarding conditions in NCNERR waters.
7. Demobilize when directed.
8. As appropriate, complete a Situation Report and After Action Review, review lessons learned, and update this procedure.

What you can do to reduce risk:

1. Conduct education and outreach for visitors, volunteers, researchers and others on identifying and notifying regarding HAB concerns. Request help in identifying HAB concerns at the Reserve.
2. Continue on-going program of water quality monitoring for nutrient levels and evidence of HAB in accordance with NOAA System-wide Monitoring Program.
3. Take note of HABs in adjacent waters and prepare for potential outbreaks at the NCNERR.
4. Consider if additional procedures and training/exercising are

warranted and integrate into training and exercise plans (Appendices H and I,).

Where you can find more information:

1. Review Centers for Disease Control (CDC) information on HABs at: http://www.cdc.gov/nceh/hsb/hab/default.htm
2. Review NOAA information on HAB and become familiar with NOAA response capabilities (analytical and public health). Information at: http://www.cop.noaa.gov/stressors/extremeevents/hab/default.aspx
3. Draw on available materials for educators wishing to develop training on HAB: http://serc.carleton.edu/microbelife/topics/redtide/education.html
4. Review the HARRNESS report with a national HAB Strategy for 2005-2015: http://www.esa.org/HARRNESS/

Hazard 7 – Wildland Fire

Scenario: **Wildland Fire**

What you Should Do:

1. Monitor local weather forecasts and the North Carolina Forest Service (NCFS) Fire Weather Intelligence Portal links: http://www.ncforestservice.gov/fire_control/fire_weather_reports.htm
2. In the event of a fire on or near NCNERR lands, notify all Reserve staff and the following:
    a. 9-1-1 for immediate fire response.
    b. North Carolina Forest Service District Ranger. For Northern sites, call: 252-232-0983; for Central sites, call: 252-946-3944; for Southern sites, call: 910-251-5750.
3. Evacuate staff, visitors, and researchers from the immediate fire hazard area.
4. If directed, assign a Reserve liaison to the Wildfire Incident Commander to provide technical and consultation assistance regarding NCNERR resources and needs.
5. If directed, support consultations with the Incident Commander, determine if a larger evacuation is necessary.
6. Monitor on-going wildfire risk and suppression efforts.
7. Upon conclusion of the fire, assess the wildfire damages. Remain alert for re-flashes and hotspots.
8. Assess areas of Reserve for safe re-entry and restart operations upon direction by Incident Commander.
9. Document all injuries and damages for potential legal claims or cost reimbursement.
10. Conduct incident debrief/lessons learned review and prepare an After Action Report for major fire incidents (Appendix J), as appropriate (for larger events).
11. Review and improve this procedure based on lessons learned, as necessary.

What you can do to reduce risk:

1. Include public education and outreach on fire prevention in Reserve outreach/training programs.
2. Establish a wildfire evacuation plan.
3. Monitor wildfire risk conditions at: http://www.ncforestservice.gov/fire_control/fire_weather_reports.htm

Where you can find more information:

1. North Carolina Forest Service Fire Control and Prevention: http://www.ncforestservice.gov/fire_control/fire_control.htm
2. FEMA Ready – Wildfires: http://www.ready.gov/wildfires
3. FEMA hazard, emergency supply recommendations, and communications plan information at: http://www.usfa.fema.gov/prevention/

Hazard 8 – Medical/Rescue and Law Enforcement Emergency

Scenario: **Medical/Rescue and Law Enforcement Emergency**

What you Should Do:

1. If a medical emergency occurs in or around the NERR office facility or at a location where the Reserve is hosting a program.
   a. Remain calm. Assess the situation, making sure the scene is safe.
   b. Determine if the incident requires external medical assistance or if the victim can safely be transported for help to an area hospital. If you are not sure, get external help by calling 9-1-1.
   c. When calling 9-1-1, provide the following information:
      - Number and location of victim(s)
      - Nature of injury or illness
      - Hazards involved
      - Nearest entrance (emergency access point)
   d. Alert trained personnel to implement CPR/First Aid until help arrives.
   e. Do not move the victim unless the victim's location is unsafe. Stay with the victim and help him or her remain calm.
   f. Control access to the scene.
   g. Notify the NERR Manager or another emergency team member of the station if they are available.
2. If a medical emergency is reported elsewhere in the NERR, dial 9-1-1 and request an ambulance. Provide the following information:
   - Number and location of victim(s)
   - Nature of injury or illness
   - Hazards involved
   - Nearest entrance (emergency access point)

   Make sure to provide clear and concise information on your location. If access to your location is restricted by road, provide alternate access information or ask for direction from 9-1-1 personnel. If appropriate, send someone to meet the ambulance at the main road and guide them to the incident location.
3. If a law enforcement emergency occurs in the NERR facility or on the site, contact the local sheriff's office: For the Currituck County Sherriff's Office, call 252-232-2216; for the Carteret County Sheriff's Office, call 252-728-8400; for the New Hanover Sheriff's Office, call 910-798-4200; and for the Brunswick Sheriff's Office, call 910-253-2736.
4. Alert trained employees (CPR/First Aid trained) to respond to the victim's location and bring a first aid kit. The Reserve's Safety Officer (Education Coordinator) maintains a list of trained personnel.
5. If first aid can be safely implemented, use NERR first aid tools to

administer immediate help. Take "universal precautions" to prevent contact with body fluids and exposure to blood borne pathogens.

6. Try to keep the victim calm if they are conscious. Avoid unnecessary conversation about the condition of the victim.
7. Implement CPR/First Aid until help arrives.
8. Assist the response personnel when they arrive.
9. When the victim(s) have been supported, assess if the threat that caused the incident remains and address it with appropriate support (e.g. slipping hazard, etc.).
10. After the emergency, complete an Incident/Accident Report.

What you can do to reduce risk:

1. Maintain first aid kits in appropriate locations.
2. Provide basic CPR/First Aid Training to staff annually, including review of this procedure. Pre-identify any staff for volunteer medical conditions (e.g. allergies) (note: medical condition information will be collected on a voluntary basis; not required to be provided).
3. Annually review and revise this procedure with Red Cross or external responder personnel.
4. Participate in area training related to a medical emergency situation at the NERR.

Hazard 9 – Riverine Flooding

Scenario: **Riverine Flooding**

What you Should Do:

1. When weather conditions indicate potential for flooding:
    a. Monitor NOAA weather briefings/radio and/or other local weather forecasts for flash flood warnings. Use FRIS to check if you are in a flood zone: http://fris.nc.gov/fris/Home.aspx?ST=NC
    b. Notify all Reserve staff of flash flood warnings.
    c. Aid in any evacuation from flood-prone areas.
    d. If time permits, move equipment and vehicles in flood-prone areas to higher ground.
    e. Secure and evacuate any buildings hat are in the flood hazard area.
    Implement equipment shutdown and computer/data backup procedures.
    Move equipment to protected location or implement removal as part of evacuation if warranted.
2. During the flood:
    a. Do not attempt to cross flooded streams or roadways on foot or in vehicles. Water is often moving faster than it appears and there is a high risk of being swept away.
    b. Request assistance via 9-1-1 for anyone who is stranded by floodwaters.
3. After the floodwaters recede:
    a. Inspect buildings and equipment for damage.
    b. Inspect shorelines for critical erosion.
    c. Ensure electrical power, gas service, and water service has been shut-off to any flood damaged buildings prior to entry.
    d. Initiate cleanup and repairs.
4. Document all costs incurred in damage assessment and recovery for potential reimbursement.
5. Conduct incident debrief/lessons learned review and update this plan and training as necessary.

What you can do to

1. Ensure NCNERR Employee Emergency Contact List (emergency contact list) phone numbers are up to date.
2. Annually, identify and implement any mitigation actions.
3. Ensure all staff members have a personal Home and Family Preparedness Plan and Kit.
4. Pre-identify flood risk zones and potential evacuation routes/high

reduce risk:

ground areas. Review riverine flooding procedure with NERR staff annually.

5. Participate in training and exercises to improve preparedness for riverine flooding, as deemed necessary (coordinating with area response agencies/neighboring facilities and entities).
6. Monitor weather reports for flash flood warnings. Consider signing up for county-specific emergency notifications at:

    a. Carteret County: https://public.coderedweb.com/CNE/0DC4FFDC7074
    b. Currituck County: https://ww2.everbridge.net/citizen/logoutLogin.action?gis_alias_id=1480761
    c. New Hanover County: https://nhcgov.onthealert.com/Terms/Index/?ReturnUrl=%2f
    d. Brunswick County: https://alertregistration.com/BrunswickcountyNC/

7. Participate in NOAA Severe Weather Preparedness Week each year, as deemed necessary. http://www.nws.noaa.gov/com/weatherreadynation/news/130303_swpw_intro.html#.VSlUZ8a6eGU

Where you can find more information:

1. Review NOAA Severe Weather Fact Sheet for your area (North Carolina): http://www.ncddc.noaa.gov/activities/weather-ready-nation/newis/
2. Review County emergency management website updates and resources on hazards, evacuation routes, shelters:

    a. Carteret County: http://www.carteretcountync.gov/244/Carteret-County-Flood-Information
    b. Currituck County: http://www.co.currituck.nc.us/flood-preparedness-planning-and-zoning.cfm
    c. New Hanover County: http://em911.nhcgov.com/be-prepared-ready-nhc/severe-weather/
    d. Brunswick County: http://www.brunswickes.com/index.html

3. Review NCDPS Information Links: https://www.ncdps.gov/Index2.cfm?a=000003,000010,000515
4. Find more information on Home and Family Preparedness Planning at: http://www.redcross.org/prepare/location/home-family/plan
5. 5. Find information on flood preparedness at: http://www.ready.gov/floods

Hazard 10 – Oil Spill/Hazardous Materials Spill

Scenario: **Oil/Hazardous Materials Spill**

What you Should Do:

1. Report all oil spills that threaten state waterways or hazardous materials spill to the National Response Center at 1-800-424-8802 and the nearest North Carolina Department of Environment and Natural Resources (DENR) Regional Office at 252-946-6481 for Currituck Banks and 910-796-7215 for Rachel Carson, Masonboro Island, and Zeke's Island during regular business hours (8am-5pm M-F). If no answer, call 919-807-6308. After hours and on the weekends, call 800-858-0368.
2. In the rare event that NCNERR is responsible for an oil or Hazmat spill:
    a. Stop or minimize the leak, if possible, using appropriate personnel protective equipment (PPE).
    b. Contain the extent of the spill with oil boom on water, earthen dikes on land, and sorbent materials.
    c. If there is a threat of fire or explosion, call 9-1-1.
    d. Call out an oil/hazmat response contractor for spill clean up.
    e. Coordinate with NCDENR Emergency Response and U.S. Coast Guard Incident command for spill cleanup.
    f. Call 9-1-1 if emergency assistance is needed or if no trained HAZWOPER personnel are available.
3. Respond to an oil or hazmat spill from external source within or threatening the Reserve as follows:
    a. Notify the appropriate authorities (see item 1 above).
    b. Evacuate for a safe distance and stay upwind of the spill if there is a potential toxic air hazard.
    c. Identify priority natural resources for protection given spill location and current conditions.
    d. Provide technical and logistical support to the Incident/Unified Command for fish and wildlife protection as directed by the county, state, or federal agency in charge if appropriate.
    e. Assist DENR's DCM in conducting the Natural Resources Damage Assessment (NRDA) following the impact.
    f. Document all activities for potential cost reimbursement.
    g. Conduct incident debrief/lessons learned review and update this plan and training as necessary.

What you can do to reduce risk:

1. Minimize on-site storage of hazardous materials and promptly dispose of waste materials at approved disposal sites.
2. Participate in the Sector North Carolina Area Committee for oil/hazardous materials preparedness when able.
3. As feasible, participate in local emergency planning committee (LEPC) meetings, or other trainings/meetings to maintain currency on Hazmat and oil spill risks, mitigation, and response measures for the Reserve's area.
4. Participate in ICS training when available.

Where you can find more information:

1. Review County information (links to FEMA Ready.gov) information on hazmat
   spills: http://www.ready.gov/hazardous-materials-incidents
2. Review the NC Oil/Petroleum Products Spill Response Plan https://www.nccrimecontrol.org/div/EM/GulfOilSpill/2010OilSpillResponsePlan.pdf.
3. Maintain currency with County LEPCs
   a. Currituck County - http://www.co.currituck.nc.us/emergency-planning-committe-current.cfm
   b. Carteret County – Email jen.sawyer@carteretcountync.gov
   c. New Hanover County - http://em911.nhcgov.com/about-us/local-emergency-planning-committee/
   d. Brunswick County - http://www.brunswickes.com/lepc.html
4. Find information on environmentally sensitive areas and protection strategies in U.S. Coast Guard Sector North Carolina Area Contingency Plan at http://bit.ly/1aTXhlY
5. Find information on Federal Region IV regional response protocols for natural resource trustees, shoreline cleanup, oil spills, and use of response
   technologies including dispersants, in-situ burning, and bioremediation at:
   http://www.rrt4.nrt.org/.
6. Maintain currency with DENR Emergency Response contacts and information at : http://portal.ncdenr.org/web/wq/emergency-response-contacts

Hazard 11 – Aircraft Crash

Scenario: **Aircraft Crash**

What you Should Do:

1. If an aircraft crashes in NCNERR, notify emergency agencies:
   a. Contact 9-1-1 for immediate rescue and firefighting assistance.
   b. Contact the Coast Guard for water rescue and oil spill response on VHF-FM Marine Band Channel 16 or telephone U.S. Coast Guard Sector North Carolina at 910-362-4015.
   c. Contact the North Carolina Department of Public Safety Division of Emergency Management Main Office at 919-825-2500. If after hours, call the emergency management 24-hour operations line at 1-800-858-0368.
   d. Provide as much information as is readily available, including:
      i. Aircraft description, location, and tail number if visible
      ii. Estimated number of persons on-board
      iii. Signs of damage, fire, leaking oil, etc.
      iv. Observed weather conditions
   e. If oil or hazardous materials are observed leaking, notify the U.S. Coast Guard National Response Center at 1-800-424-8802.
2. Assist with land or water rescue within Reserve capabilities.
   a. Assess the scene before approaching.
   b. Treat as a potential fire and hazardous materials incident; approach from upwind.
   c. Exercise caution when approaching massed victims on or in the water. Victims may surge toward rescue boats. Avoid overloading rescue boats and risk of capsize.
3. Provide immediate First Aid/CPR as necessary.
4. If directed, assign a liaison to the Fire Dept. or Coast Guard Incident Command.
5. Be prepared to implement the NCNERR Wildland Fire Hazard-Specific Procedure.
6. Be prepared to implement the NCNERR Oil Spill/Hazmat Materials Spill Hazard-Specific Procedure.
7. Assist the Incident Commander and National Transportation Safety Board (NTSB) investigators as requested within Reserve staff technical competencies.
8. Monitor for impacts to Reserve natural resources.
9. Document all injuries and damages for potential legal claims or cost reimbursement.
10. Prepare daily (or as necessary) Situation Reports using NCNERR Situation Report or ICS-201 form (see Appendix J).
11. Demobilize when the emergency has passed.
12. Conduct incident debrief/lessons learned review and prepare After-

Action Report as appropriate (see Appendix J). Update plans and training as necessary.

What you can do to reduce risk:

1. Ensure designated NCNERR staff complete First Aid/CPR training.
2. Participate in the Local Emergency Planning Committee (LEPC) as time and resources permit.
3. Participate in the Sector North Carolina Area Committee for oil/hazardous materials preparedness as time and resources permit.

Where you can find more information:

1. North Carolina Department of Public Safety Hazardous Material Reporting: https://www.ncdps.gov/Index2.cfm?a=000003,000010,000020,000492
2. National Transportation Safety Board (NTSB) Investigation Procedures: http://www.ntsb.gov/investigations/process.htm
3. U. S. Coast Guard National Response Center: http://www.nrc.uscg.mil/

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Appendix E - Continuity of Operations Planning (COOP)

Succession NERR

1. NERR Manager (Emergency Manager)
2. Central Sites Manager (Emergency Preparedness Coordinator)
3. Research Coordinator (Research and Monitoring Coordinator)
4. Respective Site Manager

Continuity of Essential Functions

Essential Function	Consequence of Interruption	Continuity Strategy	Continuity Assigned To
Access to research data	Baseline readings will not be available and impacts of disaster may be indeterminate. Loss of historical data could jeopardize success of overall NERR mission.	Back up all key data to a server; ensure the server is backed up to removable hard-disks. In an emergency, the removable disks are evacuated to safe location offsite. Notify NERR CDMO and Data Management Committee if data collection will be interrupted for an extended period of time.	Research and Monitoring Coordinator
Communications Systems	Loss of communication with field teams and outside emergency assistance.	Maintain and deploy battery powered handheld radios and cellular telephones. Portable emergency generator and fuel to re-charge batteries. Mobile radios in larger boats and some vehicles.	Emergency Preparedness Coordinator
Vehicles and boats for research.	Research delayed until alternate transportation arranged.	Evacuate vehicles and boats out of harm's way in advance of a known threat.	Emergency Preparedness Coordinator

Continuity Facilities

In the event of a significant hazard that requires evacuation of NCNERR facilities, staff will evacuate to their homes or alternate safe locations. They will check-in daily with their supervisor via the Contact List (Appendix B) for assignments to work from home or an alternate designated facility until it is safe to return to the office. In the event that NCNERR damage precludes return to the NERR facilities following the emergency, the NCNERR Manager will consult with NOAA, UNCW, and NCDENR to establish alternate worksite arrangements.

Training and Exercises

NCNERR staff will review hazard-specific procedures annually and will implement the training and exercises identified in Appendix I, as resources allow. Training and Exercises will include a focus on testing continuity of operations procedures to identify improvements to the plans identified above. In addition, training and exercises may identify areas for improvement to this Disaster Response Plan and hazard-specific procedures in Appendix D.

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Appendix F - Hazard Identification and Risk Assessment

As part of disaster response planning, the NCNERR has implemented a hazard identification and risk assessment process for each of the four Reserve components. The detailed HIRAs from this process are provided in this Appendix and tie to Table 6 – 9 in the Disaster Response Plan body. These HIRAs will be revisited as described in the plan and outputs of the HIRA process will be used in an ongoing manner to guide future DRP updates and NCNERR disaster response planning priorities.

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Currituck Banks Reserve HIRA results:

Hazard	Potential Impacts [Focused on National Estuarine Research Reserve (NERR)]								Probability Indicator (0 to 1)	Potential Impact Indicator (0 to 1)	Probability Weight	Potential Impact Weight	Overall Ranking	Relative Priority
	Life	Health	Property	Environment		Economy								
				Physical	Biological	NERR	Natural Resources	Local/Regional Business						
Hurricane	1	2	0	2	2	2	2	0	1	0.46	50%	50%	73	High
Coastal Erosion	3	3	1	2	2	2	0	3	0.75	0.67	50%	50%	71	High
Severe Coastal Storms	1	2	1	1	1	1	1	1	1	0.38	50%	50%	69	High
Oil Spill	1	2	3	2	2	2	2	2	0.5	0.67	50%	50%	58	Medium
Heavy Rainfall/Riverine Flooding	0	2	0	0	2	1	2	1	0.75	0.33	50%	50%	54	Medium
Invasive Species	2	3	0	1	1	0	1	0	0.75	0.33	50%	50%	54	Medium
Harmful Algal Bloom (HAB)	0	0	0	0	0	0	0	0	1	0	50%	50%	50	Medium
Vessel Grounding	2	2	2	2	2	0	2	0	0.5	0.5	50%	50%	50	Medium
HazMat (other than oil)	2	3	2	1	1	1	1	1	0.5	0.5	50%	50%	50	Medium
Lightning	0	1	0	0	2	2	2	2	0.5	0.38	50%	50%	44	Medium
Wildland Fire	2	3	0	1	1	1	0	0	0.5	0.33	50%	50%	42	Medium
Earthquake	1	1	0	1	1	1	1	1	0.5	0.29	50%	50%	40	Low
Tornado	3	3	0	2	1	1	1	1	0.25	0.5	50%	50%	38	Low
Aircraft Crash	0	1	0	0	1	1	1	1	0.5	0.21	50%	50%	35	Low
Rail HAZMAT	1	1	3	1	1	2	1	1	0.25	0.46	50%	50%	35	Low
Law Enforcement Response	1	1	0	1	2	1	1	1	0.25	0.33	50%	50%	29	Low
Medical/ Rescue Emergency	1	1	0	1	1	1	1	1	0.25	0.29	50%	50%	27	Low
Structure Fire	1	1	1	0	1	1	0	1	0.25	0.25	50%	50%	25	Low
Vehicle Use	0	0	0	0	0	0	0	0	0	0	50%	50%	0	Low

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Rachel Carson Reserve HIRA results:

Hazard	Potential Impacts [Focused on National Estuarine Research Reserve (NERR)]								Probability Indicator (0 to 1)	Potential Impact Indicator (0 to 1)	Probability Weight	Potential Impact Weight	Overall Ranking	Relative Priority
	Life	Health	Property	Environment		Economy								
				Physical	Biological	NERR	Natural Resources	Local/Regional Business						
Hurricane	1	1	3	3	3	3	2	2	0.75	0.75	50%	50%	75	High
Severe Coastal Storms	1	2	1	1	1	1	1	2	1	0.42	50%	50%	71	High
Vessel Grounding	2	2	1	2	1	1	1	0	1	0.42	50%	50%	71	High
Coastal Erosion	0	0	1	3	2	1	1	1	1	0.38	50%	50%	69	High
Invasive Species	1	2	0	1	3	1	1	0	1	0.38	50%	50%	69	High
Tornado	2	3	2	1	1	1	0	1	0.75	0.46	50%	50%	60	High
Harmful Algal Bloom (HAB)	0	3	0	0	1	2	1	1	0.75	0.33	50%	50%	54	Medium
Wildland Fire	0	1	3	0	1	2	0	0	0.75	0.29	50%	50%	52	Medium
Medical/ Rescue Emergency	2	3	0	1	1	0	0	0	0.75	0.29	50%	50%	52	Medium
Heavy Rainfall/Riverine Flooding	0	2	0	0	1	1	1	1	0.75	0.25	50%	50%	50	Medium
Oil Spill	0	1	0	2	2	2	2	2	0.5	0.46	50%	50%	48	Medium
Aircraft Crash	2	3	1	0	1	1	1	1	0.5	0.42	50%	50%	46	Medium
HazMat (other than oil)	1	1	0	1	1	2	1	1	0.5	0.33	50%	50%	42	Medium
Lightning	2	3	1	0	0	1	0	0	0.5	0.29	50%	50%	40	Low
Law Enforcement Response	1	1	0	1	1	1	0	1	0.5	0.25	50%	50%	38	Low
Structure Fire	1	1	3	1	0	3	1	1	0.25	0.46	50%	50%	35	Low
Earthquake	1	2	2	1	1	1	1	1	0.25	0.42	50%	50%	33	Low
Rail HAZMAT	1	1	0	0	1	1	1	1	0.25	0.25	50%	50%	25	Low

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Masonboro Island Reserve HIRA results:

Hazard	Potential Impacts [Focused on National Estuarine Research Reserve (NERR)]								Probability Indicator (0 to 1)	Potential Impact Indicator (0 to 1)	Probability Weight	Potential Impact Weight	Overall Ranking	Relative Priority
	Life	Health	Property	Environment		Economy								
				Physical	Biological	NERR	Natural Resources	Local/Regional Business						
Hurricane	3	3	1	3	2	3	2	1	0.75	0.75	50%	50%	75	High
Severe Storms	1	2	1	1	1	1	1	1	1.00	0.38	50%	50%	69	High
Coastal Erosion	0	0	1	3	1	0	0	0	1.00	0.21	50%	50%	60	High
HazMat (other than oil)	3	1	0	1	2	1	1	1	0.75	0.42	50%	50%	58	Medium
Law Enforcement Response	2	1	0	1	1	1	0	1	0.75	0.29	50%	50%	52	Medium
Medical Emergency/ Rescue	2	3	0	1	1	0	0	0	0.75	0.29	50%	50%	52	Medium
Riverine Flooding/ Stormwater Runoff	0	2	0	0	1	1	1	1	0.75	0.25	50%	50%	50	Medium
Vessel Grounding	1	1	0	2	1	0	1	0	0.75	0.25	50%	50%	50	Medium
Wildland Fire	1	2	0	1	1	0	0	0	0.75	0.21	50%	50%	48	Medium
Oil Spill	0	1	0	2	2	1	2	2	0.50	0.42	50%	50%	46	Medium
Invasive Species	0	0	0	3	3	0	1	1	0.50	0.33	50%	50%	42	Medium
Tornado	2	2	1	1	1	1	1	1	0.25	0.42	50%	50%	33	Low
Aircraft Crash	2	2	0	2	1	1	1	1	0.25	0.42	50%	50%	33	Low
Lightning	1	1	1	0	0	1	0	0	0.50	0.17	50%	50%	33	Low
Earthquake	1	1	0	1	1	1	1	1	0.25	0.29	50%	50%	27	Low
Harmful Algal Bloom (HAB)	0	1	0	1	1	1	1	1	0.25	0.25	50%	50%	25	Low
Rail HAZMAT	0	0	0	0	0	0	0	0	0.00	0.00	50%	50%	0	Low
Structure Fire	0	0	0	0	0	0	0	0	0.00	0.00	50%	50%	0	Low

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Zeke's Island Reserve HIRA results:

Hazard	Potential Impacts [Focused on National Estuarine Research Reserve (NERR)]								Probability Indicator (0 to 1)	Potential Impact Indicator (0 to 1)	Probability Weight	Potential Impact Weight	Overall Ranking	Relative Priority
	Life	Health	Property	Environment		Economy								
				Physical	Biological	NERR	Natural Resources	Local/Regional Business						
Hurricane	3	3	1	3	2	3	2	1	0.75	0.75	50%	50%	75	High
Severe Storms	1	2	1	1	1	1	1	1	1.00	0.38	50%	50%	69	High
Riverine Flooding/ Stormwater Runoff	1	3	1	2	1	1	1	1	0.75	0.46	50%	50%	60	High
Coastal Erosion	0	0	0	3	1	0	0	0	1.00	0.17	50%	50%	58	Medium
HazMat (other than oil)	3	3	0	2	3	3	3	3	0.25	0.83	50%	50%	54	Medium
Medical Emergency/ Rescue	2	3	0	1	1	0	0	0	0.75	0.29	50%	50%	52	Medium
Wildland Fire	1	2	0	1	1	0	0	0	0.75	0.21	50%	50%	48	Medium
Oil Spill	0	1	0	2	2	1	2	2	0.50	0.42	50%	50%	46	Medium
Invasive Species	0	0	0	3	3	0	1	1	0.50	0.33	50%	50%	42	Medium
Vessel Grounding	1	2	0	2	1	0	1	0	0.50	0.29	50%	50%	40	Low
Aircraft Crash	2	2	0	2	1	1	1	1	0.25	0.42	50%	50%	33	Low
Tornado	1	2	1	1	1	1	1	1	0.25	0.38	50%	50%	31	Low
Harmful Algal Bloom (HAB)	0	2	0	1	1	1	1	1	0.25	0.29	50%	50%	27	Low
Earthquake	1	1	0	1	1	1	1	1	0.25	0.29	50%	50%	27	Low
Vehicle Use	1	1	0	1	1	1	1	0	0.25	0.25	50%	50%	25	Low
Law Enforcement Response	1	1	0	1	1	1	0	1	0.25	0.25	50%	50%	25	Low
Lightning	1	1	1	0	0	1	0	0	0.25	0.17	50%	50%	21	Low
Rail HAZMAT	0	0	0	0	0	0	0	0	0.00	0.00	50%	50%	0	Low
Structure Fire	0	0	0	0	0	0	0	0	0.00	0.00	50%	50%	0	Low

Potential Impact Descriptions

Life	Loss of human life [staff, visitors, researchers (registered, unregistered), persons working or recreating within NERR boundaries].
Health	Human Injury or illness [risk to staff, visitors, researchers (registered, unregistered), persons working or recreating within NERR boundaries]
Property	Damage to buildings and infrastructure (buildings, roads, roofs, vehicles, boats, piers, transformers, power lines, etc.)
Environment	Impacts to the environment
Physical	Coastline, cultural resources, wetlands, barrier islands, rivers, other landforms and waterways
Biological	Animal and plant life (sea grass, protected species, reefs, plankton, etc.)
Economy	Economy considered at three levels
NERR	Impacts to NERR operations and ability to accomplish its mission - research, stewardship, education, outreach
Natural Resources	Impacts to natural resources protected by the NERR in terms of species and habitat impacts, aesthetics, fishing, and other economic uses
Local/Regional Resources	Impacts to NERR natural resources that have an impact on local/regional economy - hotels, gas stations, shops, etc. tied to tourism/fishing/recreational/natural resource driven economy

Impact Legend

0 = No Potential Impact

1 = Minimum Potential Impact: little to no potential for loss of life; minor health impacts (injury, illness), few and minor property impacts (no major repairs needed; no significant impact to operations); injury to environment within range of natural impacts, total recovery expected without human intervention; minor damage to economy (little noticeable impact, short term return to normal economic conditions)

2 = Moderate Potential Impact: potential for loss of life; potential for some health impacts (sickness and injury causing need for first aid; injury to environment reversible with human intervention, no permanent loss; moderate damage to economy (noticeable short- to mid-term impact, requiring some time for recovery)

3 = Major Potential Impact: significant potential for loss of life; major potential for health impacts (sickness and injury, requiring EMT or hospitalization); major potential property losses (requiring replacement before resuming operations); irreversible injury to or loss of environmental resource; not recoverable even with human intervention; major damage to economy (significant impact, long-term to recover and requiring outside assistance)

Probability Indicate Legend

0 = Does not occur

0.25 = Has not occurred but the potential exists

0.5 = Occurred once in recorded history or has not happened but climate change is increasing the future potential

0.75 = Occurred several times in recorded history or occurred once and climate change is increasing the future potential

1 = Occurs chronically/regularly and climate change is increasing future potential

Priority Ranges

Low = 0 to 40

Medium = 41 to 60

High = 61 and above

Appendix G - Response Planning Stakeholder List

Currituck Banks:

Name	Organization	Title	Phone Number	Email	Emergency Planning Notes
Sgt. Gary Dodd	Currituck County Sherriff's Office	North Beach Sergeant	252-453-2171	dodd236@yahoo.com	Attended Currituck Banks DRP Workshop.
Rebecca Christenbury	Currituck County Emergency Management	Program Assistant	252-232-2115 ext. 6012	Rebecca.Christenbury@CurrituckCountyNC.gov	Attended Currituck Banks DRP Workshop.
Mary Beth Newns	Currituck County Emergency Management	Director	252-232-2115, ext. 6013	Mary.Newns@CurrituckCountyNC.gov	Attended Currituck Banks DRP Workshop.
James Mims	Currituck County Fire Marshal	Fire Marshal/Safety Director	252-232-6641	James.Mims@CurrituckCountyNC.gov	Attended Currituck Banks DRP Workshop.
Lt. Nasif Gordon	U.S. Coast Guard	Chief	252-441-0500, ext 113	Nasif.a.gordon@uscg.mil	Attended Currituck Banks DRP Workshop.
Jarrett Culbreth	North Carolina Wildlife Resources Commission	Wildlife Officer	252-455-7441	jarrettculbreth@ncwildlife.org	Attended Currituck Banks DRP Workshop.
Aaron McCall	The Nature Conservancy	Northeast Regional Steward	252-441-2525	ajmccall@tnc.org	Attended Currituck Banks DRP Workshop.

Russ Haddad	Currituck County Regional Airport	Manager	252-453-2876	Russell.haddad@currituckcountync.gov	Attended Currituck Banks DRP Workshop.
Robert Corbett Jr.	North Carolina Division of Marine Fisheries	Technician II	252-264-3911	Robert.corbett@ncdenr.gov	Attended Currituck Banks DRP Workshop.
Josh Bivans	North Carolina Forest Service	Currituck County Ranger	252-455-0682	joshua.bivans@ncagr.gov	Attended Currituck Banks DRP Workshop.
Dan Scanlon	Currituck County	Manager	252-232-2075, ext 4002	Leeann.walton@currituckcountync.gov	Contacted for DRP workshop but did not attend.
David May	North Carolina Division of Water Resources	Water Quality Program Regional Supervisor	252-948-3939	David.may@ncdenr.gov	Contacted for DRP workshop but did not attend.
Frank Jennings	North Carolina Division of Coastal Management	Elizabeth City Office District Manager	252-264-3901	Frank.jennings@ncdenr.gov	Contacted for DRP workshop but did not attend.
Tim Hardy	North Carolina Wildlife Resources Commission	District 1 Captain	252-377-2956	Tim.hardy@ncwildlife.org	Contacted for DRP workshop but did not attend.
Lt. Jason Banks	Currituck County Patrol Division	Patrol Lieutenant		Jason.Banks@CurrituckCountyNC.gov	Contacted for DRP workshop but did not attend.
Rick Galganski	Corolla Fire and Rescue	Chief	252-453-3242	corollachief6@aol.com	Contacted for DRP workshop but did not attend.

Susan Johnson	Currituck County Sherriff's Office	Sheriff	252-453-8204	Susan.johnson@currituckcountync.gov	Contacted for DRP workshop but did not attend.
Stephen Jarvis	North Carolina Wildlife Resources Commission	Currituck Area Sergeant	252-435-3071	Steve.jarvis@ncwildlife.org	Contacted for DRP workshop but did not attend.
Mike Petruncio	North Carolina Forest Service	District Forester	252-331-4781	Mike.petruncio@ncagr.gov	Contacted for DRP workshop but did not attend.
Art Beyer	U.S. Fish and Wildlife Service	Supervisory Biologist	252-475-8355	Arthur_beyer@fws.gov	Contacted for DRP workshop but did not attend.

Rachel Carson:

Name	**Organization**	**Title**	**Phone Number**	**Email**	**Emergency Planning Notes**
Jen Sawyer	Carteret County Emergency Management	Emergency Management Coordinator/ Planner	252-222-5841	jen.sawyer@carteretcountync.gov	Attended Rachel Carson DRP Workshop.
Lauren Hermley	Town of Beaufort	Assistant Town Manager	252-728-2141	l.hermley@beaufortnc.org	Attended Rachel Carson DRP Workshop.
Steve Lewis	Beaufort Police	Chief	252-728-4561	S.Lewis@beaufortnc.org	Attended Rachel Carson DRP Workshop.
Tammy Turek	Beaufort Fire Department	Administrative Assistant	252-728-4325	t.turek@beaufortnc.org	Attended Rachel Carson DRP Workshop.

Larry Fulp	Beaufort Fire Department	Fire Chief	252-728-4325	l.fulp@beaufortnc.org	Attended Rachel Carson DRP Workshop.
Mark Eakes	Beaufort Public Works	Director	252-728-7266	m.eakes@beaufortnc.org	Contacted for DRP workshop but did not attend.
OIC - BMCS Jeremy McConnell	Fort Macon USCG	Officer in Command	252-247-4583	jeremy.s.mcconnell@uscg.mil	Contacted for DRP workshop but did not attend.
Patrick Kenney	Cape Lookout NPS	Superintendent	(252) 728-2250 ext. 3034	Pat_Kenney@nps.gov	Contacted for DRP workshop but did not attend.
Asa Buck, III	Carteret County Sheriff	Sheriff	252-504-4800	asab@carteretcountync.gov	Contacted for DRP workshop but did not attend.
Eddie Lewis	Carteret County Fire	Fire Marshal	252-222-5841	eddie.lewis@carteretcountync.gov	Contaced for DRP workshop but did not attend.
Dominick Brugnolotti	DUML	Assistant Director	(252) 504-7652	dominick.brugnolotti@duke.edu	Attended Rachel Carson DRP Workshop.
Jim Guyton	NOAA NCCOS	Research Coordination & Admin Services	252-728-8773	jim.guyton@noaa.gov	Contaced for DRP workshop but did not attend.
Roy Brownlow	DCM	District Manager	252-808-2808	roy.brownlow@ncdenr.gov	Contaced for DRP workshop but did not attend.
Jim Gregson	DWQ	Water Quality Program Supervisor	(910) 796-7386	jim.gregson@ncdenr.gov	Contaced for DRP workshop but did not

					attend.
Patricia Fowler	Shellfish Sanitation	Section Chief	252-726-6827, ext. 8147	Patti.Fowler@ncdenr.gov	Attended Rachel Carson DRP Workshop.
Rich Bandy	Weather Service	Meteorologist-in-Charge		Richard.Bandy@noaa.gov	Attended Rachel Carson DRP Workshop.
Paula Stanley	Health Department	Local Public Health Administrator	252-728-8550	paulas@carteretcountync.gov	Contacted for DRP workshop but did not attend.
Curtis Oden	Health Department Pest Management	Supervisor	252-728-8585	curtiso@carteretcountygov.org	Attended Rachel Carson DRP Workshop.
	USCG Auxiliary	General contact, Flotilla 20-2	(252) 808-3091	benandlibbie1@embarqmail.com	Contacted for DRP workshop but did not attend.
	Fort Macon Sail and Power Squadron		252-822-0022	fmspsorg@gmail.com	Contacted for DRP workshop but did not attend.
Ethan Hazard	Morehead City Port	Police Chief, Port of Morehead City	252-808-4207	Ethan.Hazard@ncports.com	Contacted for DRP workshop but did not attend.
W. Ray McKeithan	Potash Corporation	Manager, Public and Government Affairs	(252) 322-8136	WRMcKeithan@potashcorp.com	Contacted for DRP workshop but did not attend.
Joe Jones	Michael J Smith Field, airport	Director	252.728.1928	KMRHairport@embarqmail.com	Contacted for DRP workshop but did not attend.

Lee Sykes	TowBoat US	Owner	252-728-5088	captleesykes@yahoo.com	Attended Rachel Carson DRP Workshop.
Chris Batsavage	DMF	Safety Committee Chair		chris.batsavage@ncdenr.gov	Contacted for DRP workshop but did not attend.
Todd Radabaugh	Wildlife Resources Commission	Regional Capt.	910-789-1401	todd.radabaugh@ncwildlife.org	Contacted for DRP workshop but did not attend.
Randy Newman	Fort Macon State Park	Superintendent	252-726-3775	randy.newman@ncdenr.gov	Contacted for DRP workshop but did not attend.
Perry Barrow	Island Ferry Adventures	Captain	252-728-4129	pbarrow1@ec.rr.com	Could not attend DRP workshop but regularly works with Reserve through LAC.

Masonboro and Zeke's Islands:

Name	Organization	Title	Phone Number	Email	Emergency Planning Notes
Warren Lee	New Hanover Emergency Management	Director of Emergency Management	910-798-6900	wlee@nhcgov.com	Attended Masonboro/Zeke's Islands DRP Workshop.
Brian Lee	Brunswick County Emergency Services	Director of Emergency Services	910- 253-5383	director@brunswickes.com	Attended Masonboro/Zeke's Islands DRP Workshop.
David Price	Brunswick County Sherriff's Office	Sergeant	910-88-4899	deputyprice@gmail.com	Attended Masonboro/Zeke's Islands DRP Workshop.
Stan Sherman	DMF/SSRWQ	Environmental Senior Technician	910-796-7265	stan.sherman@ncdenr.gov	Attended Masonboro/Zeke's Islands DRP Workshop.
David Jordan	NC Wildlife Resources Commission	Sergeant	910-685-0837	david.jordan@ncwildlife.org	Attended Masonboro/Zeke's Islands DRP Workshop.
Cody Walker	NC Wildlife Resources Commission	Director	252-728-7266	cody.walker@ncwildlife.org	Attended Masonboro/Zeke's Islands DRP Workshop.
Steve Pfaff	National Weather Service	Warning Coordination Meteorologist	910-762-0524 ext. 223	steven.pfaff@noaa.gov	Attended Masonboro/Zeke's Islands DRP Workshop.

Steven Still	New Hanover County Emergency Management	Senior Emergency Management Specialist	910-798-6907	sstill@nhcgov.com	Attended Masonboro/Zeke's Islands DRP Workshop.
Kevin Rowland	NCDENR	Environmental Specialist II	910-796-7323	kevin.rowland@ncdenr.gov	Attended Masonboro/Zeke's Islands DRP Workshop.
Ron Stirrat	US Army Corp of Engineers	Chief, RCO	910-251-4944	ronald.p.stirrat@usace.army.mil	Attended Masonboro/Zeke's Islands DRP Workshop.
Michael Kinney	Duke Energy, Brunswick Nuclear Plant	Lead Nuclear Emergency Preparedness Specialist	910-620-7266	michael.kinney2@duke-energy.com	Attended Masonboro/Zeke's Islands DRP Workshop.
Miguel Torrez	USCG Sector North Carolina, Response Dept.	Incident Management Division Chief	910-772-2208	Miguel.E.Torrez@uscg.mil	Attended Masonboro/Zeke's Islands DRP Workshop.
Erin Woods	USCG Sector North Carolina, Response Dept.	Marine Science Technician	910-772-2219	Erin.f.woods@uscg.mil	Attended Masonboro/Zeke's Islands DRP Workshop.
Steve Schmidlin	New Hanover County Sheriff's Office	Deputy Sheriff	910-512-2700	sschmidlin@nchgov.com	Attended Masonboro/Zeke's Islands DRP Workshop.
Tom Tharrington	NCDERN DWQ	Wastewater Consultant	910-796-7324	Tom.tharrington@ncdenr.gov	Attended Masonboro/Zeke's Islands DRP Workshop.
Mark Gore	Brunswick County Emergency Services	Operation Manager	910-233-0428	Mark.gore@brunswickcounty.gov	Attended Masonboro/Zeke's Islands DRP Workshop.

Matt Davis	New Hanover County Fire	Deputy Fire Chief	910-798-7419	madavis@nhcgov.com	Attended Masonboro/Zeke's Islands DRP Workshop.
Kevin McVerry	NC Division of Coastal Management	GIS Specialist		Kevin.mcverry@ncdenr.gov	Attended Masonboro/Zeke's Islands DRP Workshop.
Jim Gregson	NC DWR	Regional Supervisor	910-796-7386	Jim.gregson@ncdenr.gov	Contacted for DRP workshop but did not attend.
Chris Crew	NCEM	State Hazard Mitigation Officer	919-825-2305	john.crew@ncdps.gov	Contacted for DRP workshop but did not attend.
Ann Markwith	DMF Shellfish Sanitation	Microbiological Technician		anne.markwith@ncdenr.gov	Contacted for DRP workshop but did not attend.
Matthew Gould	Military Ocean Terminal Sunny Point	Emergency Management	910-457-8556	matthew.t.gould.civ@mail.mil	Contacted for DRP workshop but did not attend.
Bill Walker	Division of Forest Resources – Cape Fear Area	Ranger	910-251-5750	newhanover.ncfs@ncagr.gov	Contacted for DRP workshop but did not attend.
Todd Radabaugh	Wildlife Resources Commission	Regional Capt.	910-789-1401	todd.radabaugh@ncwildlife.org	Contacted for DRP workshop but did not attend.
Ralph Evangelous	Wilmington Police	Police Chief	(910) 343-3610	officeofthechief@wilmingtonnc.gov	Contacted for DRP workshop but did not attend.

Cheryl Burgwald	Duke Energy – Brunswick Nuclear Power Plant	Sr. Emergency Preparedness Specialist	910-457-3133	cheryl.burgwald@duke-energy.com	Contacted for DRP workshop but did not attend.
Frank Csulak	NOAA	Scientific Support Coordinator	732-872-3005	frank.csulak@noaa.gov	Contacted for DRP workshop but did not attend.
Dianne Harvell	New Hanover County Health Department	Environmental Health Services Manager	910-798-6665	dharvell@nhcgov.com	Contacted for DRP workshop but did not attend.
Joe Solomon	USCG Sector North Carolina, Response Department	Commander		Joseph.H.Solomon@uscg.mil	Contacted for DRP workshop but did not attend.
Nathan Henry	NC Department of Cultural Resources	Office of State Archaeology	910-458-9042	Nathan.henry@ncdenr.gov	Contacted for DRP workshop but did not attend.
Brian Rostholder	Wilmington Airport	Operations Specialist	910-341-4336	brostholder@flyilm.com	Contacted for DRP workshop but did not attend.
Jeff Owen	Division of Parks and Recreation		910-458-5798	Jeffery.owen@ncparks.gov	Contacted for DRP workshop but did not attend.

Chris Helms	Division of Parks and Recreation	Superintendent at Carolina Beach State Park	910-458-8206	j.chris.helms@ncdenr.gov	Contacted for DRP workshop but did not attend.
Debbie Wilson	Division of Coastal Management	District Manager	910-796-7266	debra.wilson@ncdenr.gov	Contacted for DRP workshop but did not attend.
Stan Harts	UNCW Environmental Health and Safety	Director of Environmental Health and Safety	910-962-3108	hartss@uncw.edu	Contacted for DRP workshop but did not attend.
Patricia Fowler	Shellfish Sanitation	Section Chief	252-726-6827, ext. 8147	Patti.Fowler@ncdenr.gov	Contacted for DRP workshop but did not attend.
Todd Radabaugh	Wildlife Resources Commission	Regional Capt.	910-789-1401	todd.radabaugh@ncwildlife.org	Contacted for DRP workshop but did not attend.
Brent Spivey	NC Wildlife Resources Commission	Captain	910-316-7189	brent.spivey@ncwildlife.org	Contacted for DRP workshop but did not attend.

Appendix H - Annual Work Plan

Objective	Activity	Responsible Party	Anticipated Cost (extra)	Time Required	Outcome(s)	Notes
Stay connected with response community.	Attend Local Emergency Planning Committee (LEPC) monthly meetings	Site Manager	Northern: $44 Central: TBD Southern: $20	Northern: 10 hours Central: 16 hours Southern: 16 hours	1. Maintain contact list of all regional emergency planners and response agencies. 2. Gain access to other response planning. 3. Gain invitations to training and exercising. 4. Promote NERR goals and objectives. 5. Ensure responders are familiar with NERR resources, hazards, and capabilities.	Cost does not account for salary but includes cost of personal vehicle mileage. Time accounts for one person to attend four 2-hour quarterly meetings (but just two meetings in Currituck), and perform 4 hours of pre- and post-meeting work.
Stay connected with response community.	Attend Coast Guard Sector Mobile Area Contingency Planning Meetings	NERR Manager, Site Manager, Research Coordinator, or GIS Specialist as capable	TBD	TBD	1. Maintain contact list of all regional emergency planners and response agencies. 2. Gain access to other response planning. 3. Gain invitations to training and exercising. 4. Promote NERR goals and objectives. 5. Ensure responders are familiar with NERR resources, hazards, and capabilities.	Cost does not account for salary but includes cost of personal vehicle mileage, one night lodging and two days partial per diem. Time accounts for one person to attend X meetings, including X hours travel each way and perform 4 hours of pre- and post-meeting work.

Objective	Activity	Responsible Party	Anticipated Cost (extra)	Time Required	Outcome(s)	Notes
Maintain NERR internal awareness.	Report on safety/emergency preparedness status at quarterly NERR staff meetings.	Emergency Manager, Emergency Preparedness Coordinator, Reserve Safety Officer	Not applicable	2 hrs	1. NERR Manager can coordinate staff schedules for emergency preparedness activities. 2. NERR staff engaged in emergency preparedness.	
Maintain NERR emergency preparedness.	Review and update annual training and exercise plan.	Emergency Training and Exercise Coordinator	Not applicable	4 hrs	1. NERR managers can coordinate staff schedules for emergency preparedness activities. 2. NERR managers engaged in emergency preparedness.	
Maintain NERR emergency preparedness.	Schedule and provide training classes (annual)	Emergency Training and Exercise Coordinator	Not applicable	20 hrs	1. NERR managers and supervisors. Staff is trained annually. 2. Gain access to other response planning.	
Maintain NERR emergency preparedness.	Update Disaster Response Plan, Hurricane Plan, and Evacuation Procedures (annual)	Emergency Preparedness Coordinator	Not applicable	20 hrs	1. Emergency contact numbers are up-to-date in plan. 2. Hazards, resources at risk, and capabilities updated as changes occur. 3. Hazard specific procedures are updated based on lessons learned.	

Objective	Activity	Responsible Party	Anticipated Cost (extra)	Time Required	Outcome(s)	Notes
Increase NERR long-term disaster resilience	Plan new mitigation projects (annually).	Relevant site manager or support staff	As needed	As needed	1. Reduced losses during disasters.	New mitigation projects should be factored into all new construction or major facility repairs. Consider use of FEMA post-disaster mitigation grants when available.

Appendix I - Emergency Training Plan

Course	Date/ Time	Location	Pre-requisite	This course allows people to	Who takes this
Baseline ICS for Low Complexity Incidents (See course descriptions in FEMA NIMS Training Program Manual: https://www.fema.gov/pdf/emergency/nims/nims_training_program.pdf)					
IS 100 (Introduction to the Incident Command System (ICS))	Self-guided (estimated 3 hours to complete)	http://training.fema.gov/IS/NIMS.aspx	None	Participate as member of Incident Command Post (ICP) at the NERR Headquarters building or another location (as appropriate and needed to support area response efforts). Prepare for low complexity incidents recommended for Type 5 incidents.	As directed by NERR Manager to gain familiarity with NIMS/ICS terms and procedures. Recommended for Emergency Team (ET) members. After initial training, staff should take course as refresher training when directed by NERR Manager.
IS 700 (National Incident Management System (NIMS), an Introduction)	Self-guided (estimated 3 hours to complete)	http://training.fema.gov/IS/NIMS.aspx	None	Participate as member of ICP at the NERR Headquarters building or another location (as appropriate and needed to support area response efforts). Preparation for low complexity incidents; recommended for Type 5 incidents.	As directed by NERR Manager to gain familiarity with NIMS/ICS terms and procedures. Recommended for ET members. After initial training, staff should take course as refresher training when directed by NERR Manager.
Course	**Date/ Time**	**Location**	**Pre-requisite**	**This course allows people to**	**Who takes this**
First Aid	Annually	To be identified	None	Provide emergency medical assistance to staff and visitors, while awaiting external medical response personnel (ambulance, EMT)	As directed by NERR Manager and as resources allow.
CPR/AED	Annually	To be identified	None	Provide emergency medical assistance	As directed by NERR Manager

				to staff and visitors, while awaiting external medical response personnel (ambulance, EMT)	and as resources allow.
Wilderness First Aid	At Reserve, based on offerings and funding availability	Implemented by Outward Bound providers for NERRs in the past.	Current Adult CPR/AED Certification	Provides preparedness to provide immediate First Aid in the field when professional medical assistance may be far away. May be available through area Outward bound providers.	As directed by NERR Manager, based on need and resource availability.
ICS Training for Long Term Consideration (for Higher Complexity Incidents and for those that May Provide Supervisory Role within a Larger Incident Command) (See course descriptions in FEMA NIMS Training Program Manual): https://www.fema.gov/pdf/emergency/nims/nims_training_program.pdf)					
IS 200 (ICS for Single Resources and Initial Action Incidents)	Self-guided (estimated 3 hours to complete)	http://training.fema.gov/IS/NIMS.aspx	None	Participate as member of ICP at the NERR Headquarters building or another location (as appropriate and needed to support area response efforts). Preparation for low complexity incidents; recommended to support Type 4 incidents.	As directed by NERR Manager based on annual reviews of response needs and resource availability.
IS 800 (National Response Framework (NRF), an Introduction)	Self-guided (estimated 3 hours to complete)	http://training.fema.gov/IS/NIMS.aspx	None	Participate as member of ICP at the NERR Headquarters building or another location (as appropriate and needed to support area response efforts). Preparation for low complexity incidents; recommended to support Type 1, 2, and 3 incidents.	As directed by NERR Manager based on annual reviews of response needs and resource availability.
IS 300 (Intermediate ICS) and 400 (Advanced ICS)	Classroom training	Various off site offerings	ICS 100 and 200	Gain more knowledge and qualifications to support higher complexity incidents and serve with increasing supervisory role in response organizations. Provides training for personnel who require advanced knowledge and will support Type 1, 2, and 3 incidents. These	As directed by NERR Manager based on annual reviews of response needs and resource availability.

				courses build on ICS 200 and 300.	

Appendix J - Forms and Tools

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Situation Report

Insert the Date of Incident (Start-Current)

Date/Time of Report		**Duty Officer (Name, Phone, Email)**	

Describe the Situation and its Current Status

Describe the emergency/disaster conditions, area impacted, and threatened areas. Describe potential incident health and safety hazards.

Current and Planned Actions of Response Team

Describe the agencies notified, actions taken at the NERR, NERR responsibilities, and next steps, if any.

Response Resources Summary and Organization

Describe NERR resources assigned to the response and NERR role within Incident Command.

/s/	Duty Officer Signature

Report Distribution: (list the email or fax numbers and contacts provided the report)

Note: Includes topics included on ICS 201 Form (included later in Appendix J).

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

After Action Report (AAR)

Event/Hazard:		**Duration**	
Location:		**Prepared by:**	

Description

Describe the emergency/disaster, notification procedures, parties involved, lead agency, and areas impacted.

Applicable FEMA Core Capabilities: ❑Planning ❑Operational Coordination (Incident Mgt, EOC Support) ❑Environmental Response/Health and Safety (Oil/HAZMAT/HAB) ❑Public Health & Medical (Emergency Lifesaving) ❑Public & Private Services (Firefighting) ❑Natural and Cultural Resources ❑Other_____

Lessons Learned

List things that went well and gaps or problems with the response. Categories can include: plans & procedures, equipment, communication, training requirements, protection strategies, access to data, documentation, restoration activities, and cost recovery.

Strengths:

Gaps:

Improvement Plan

List actions required and planned to improve preparedness for future events (e.g., revisions to DRP procedures, exercises on particular topics, equipment/supply purchase, protocol development)

/s/	NERR Manager Signature

Report Distribution: *(list the email or fax numbers and contacts provided the report)*

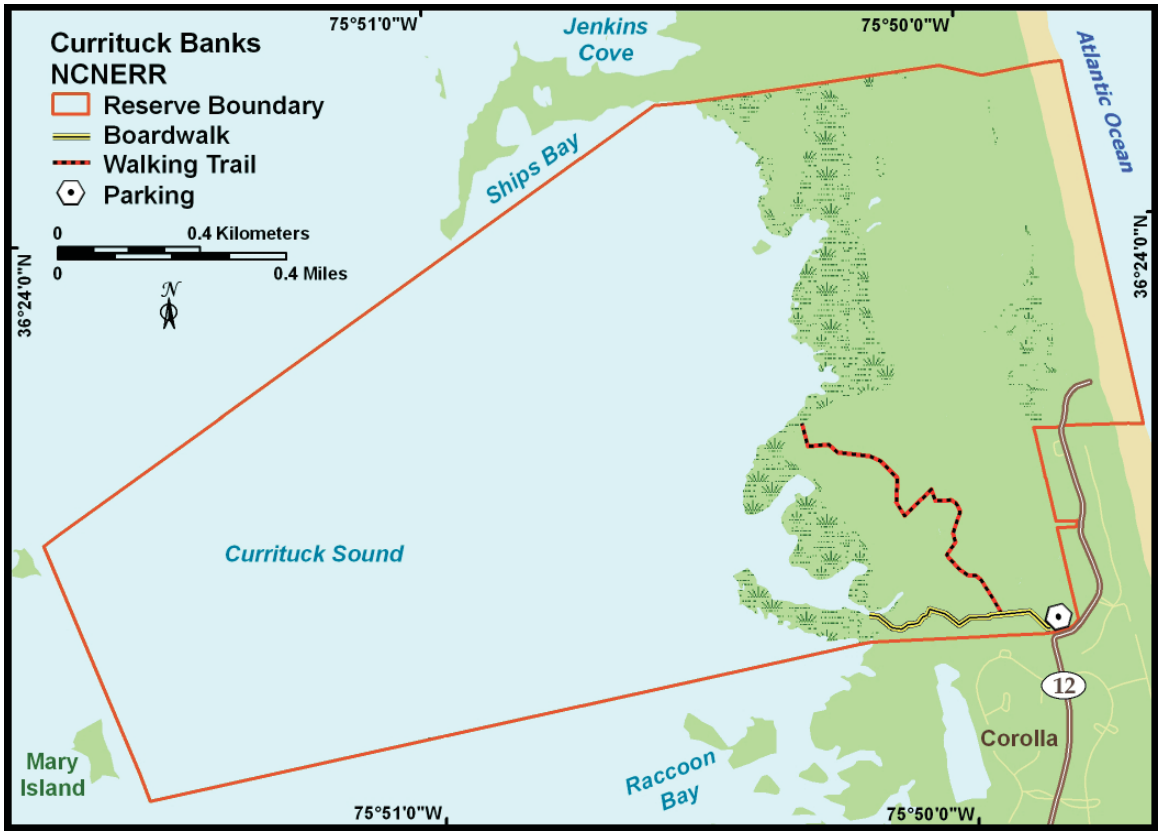
Note: Condensed from FEMA Homeland Security Exercise and Evaluation Program (HSEEP) After Action Report

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Reserve Emergency Quick Reference Tool
Currituck Banks Reserve

Use this as a quick reference that can be marked on and handed to a responder, who is likely to be unaware of natural resource considerations at the NERR. Like any "visitor," responders need a quick visual aid to alert them to danger, to show them areas and species to protect, and to illustrate invasive species to avoid relocating. **Front:** Locational map, notes, and emergency contacts. **Back:** Emergency precautions for the NERR and Responders.

Mark on this map to communicate locations of hazards and highly sensitive natural resources.



Notes:

For additional information, consult:
NERR Manager (Emergency Manager) Rebecca Ellin: 910-665-9757
NERR CTP Coordinator (Emergency Training and Exercise Coordinator) Whitney Jenkins: 252-838-0882
Currituck Banks Reserve Site Manager (Emergency Risk Manager and Capability Coordinator) Scott Crocker: 252-261-8891
NERR Management Plan and GIS Maps – information on NERR habitat, species, access, water depths
USCG Sector Mobile Geographic Response Plans – planned protection strategies for oil spills, coastal maps, sensitive areas. Available at:

Add/delete new precautions as necessary for an incident. May also be laminated for reuse.

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

PROTECT IF AT ALL POSSIBLE – TAKE PRECAUTIONS TO AVOID INJURY

Highly Sensitive Habitats and Species – Protect

Saltmarsh – Sensitive habitat - minimize walking, avoid anchoring, reduce wake to minimize edge erosion.

Oyster Reef – Sensitive habitat important to juvenile fish and shorebirds. Can be submerged or partially exposed depending on tides.

Dune System – Sensitive to disturbance – avoid topographic alteration and disturbance of plants and plant roots.

Sea Turtles – Threatened sea turtles nest on the ocean beach between May and August. Hatchlings emerge between July and October.

Shorebird Nesting – Least terns, plovers, and other shorebirds nest and raise young on the open sand of the beach and back dunes between April and August.

Diamondback Terrapin – Species of special concern. Avoid eggs/nests on dry land (April - September). Avoid turtles in waterways.

Highly Sensitive – Protect

Submerged Aquatic Vegetation – Sensitive habitat, do not anchor or step here.

Invasive Plant - Do Not Transport

Invasive Species – Include: Russian olive (silverthorn), Eurasian watermilfoil, alligator weed, and phragmites. Report sightings, avoid moving, and wash equipment when leaving an infested area.

Hazards/Dangers - Avoid

Cottonmouth/Eastern Cottonmouth – Venomous snake (mostly in swamps, but can be on land). Be aware and avoid. If bitten, use venom extractor and call for emergency medical help (911).

Hazards/Dangers – Avoid

Wild Horses – Protect the horses and your safety by maintaining a distance of at least 50 feet away. If you get too close to a wild horse, you could be charged, kicked or bitten.

Feral Hogs – Non-native mammals dangerous to humans and NERR habitats.

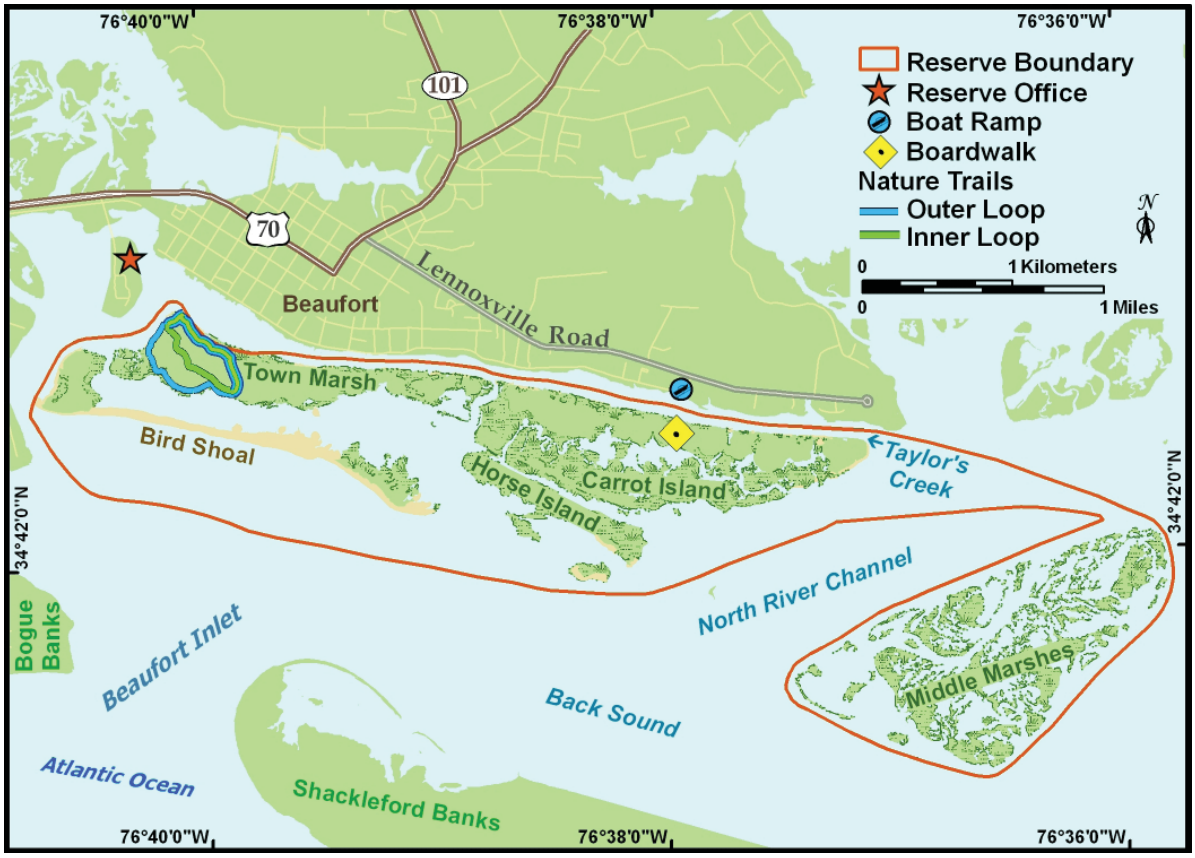
Heat/Sun and Insects – Responders should protect themselves from heat/sun and potential biting insects. Reserve staff can provide more information.

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Rachel Carson Reserve

Use this as a quick reference that can be marked on and handed to a responder, who is likely to be unaware of natural resource considerations at the NERR. Like any "visitor," responders need a quick visual aid to alert them to danger, to show them areas and species to protect, and to illustrate invasive species to avoid relocating. **Front:** Locational map, notes, and emergency contacts. **Back:** Emergency precautions for the NERR and Responders.

Mark on this map to communicate locations of hazards and highly sensitive natural resources.



Notes:

For additional information, consult:
NERR Manager (Emergency Manager) Rebecca Ellin: 910-665-9757
NERR CTP Coordinator (Emergency Training and Exercise Coordinator) Whitney Jenkins: 252-838-0882
Currituck Banks Reserve Site Manager (Emergency Risk Manager and Capability Coordinator) Paula Gilkin: 252-838-0886
NERR Management Plan and GIS Maps – information on NERR habitat, species, access, water depths
USCG Sector Mobile Geographic Response Plans – planned protection strategies for oil spills, coastal maps, sensitive areas. Available at:

Add/delete new precautions as necessary for an incident. May also be laminated for reuse.

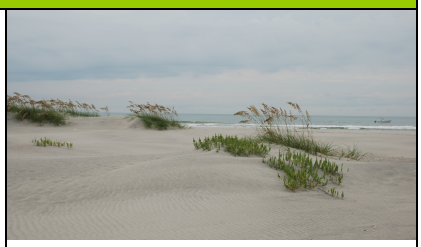
NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

PROTECT IF AT ALL POSSIBLE – TAKE PRECAUTIONS TO AVOID INJURY

Highly Sensitive Habitats and Species – Protect

Saltmarsh – Sensitive habitat - minimize walking, avoid anchoring, reduce wake to minimize edge erosion.

Oyster Reef – Sensitive habitat important to juvenile fish and shorebirds. Can be submerged or partially exposed depending on tides.



Dune System – Sensitive to disturbance – avoid topographic alteration and disturbance of plants and plant roots.

Sea Turtles – Threatened sea turtles nest on the ocean beach between May and August. Hatchlings emerge between July and October.

Shorebird Nesting – Least terms, plovers, and other shorebirds nest and raise young on the open sand of the beach and back dunes between April and August.

Diamondback Terrapin – Species of special concern. Avoid eggs/nests on dry land (April - September). Avoid turtles in waterways.

Highly Sensitive – Protect

Submerged Aquatic Vegetation – Sensitive habitat, do not anchor or step here.

Invasive Plant - Do Not Transport

Invasive Species – Include: Tamarisk tree (or salt cedar), Russian olive, and nutria. Report sightings, avoid moving, and wash equipment when leaving an infested area.

Hazards/Dangers - Avoid

Soft Sediment and Mud – Responders can get stuck in this habitat. Be aware and avoid.

Hazards/Dangers – Avoid

Wild Horses – Protect the horses and your safety by maintaining a distance of at least 50 feet away. If you get too close to a wild horse, you could be charged, kicked or bitten.

Oysters – Protect yourself from oyster cuts by avoiding the habitat and wearing appropriate clothing.

Heat/Sun and Insects – Responders should protect themselves from heat/sun and potential biting insects. Reserve staff can provide more information.

Masonboro Island Reserve

Use this as a quick reference that can be marked on and handed to a responder, who is likely to be unaware of natural resource considerations at the NERR. Like any "visitor," responders need a quick visual aid to alert them to danger, to show them areas and species to protect, and to illustrate invasive species to avoid relocating. **Front:** Locational map, notes, and emergency contacts. **Back:** Emergency precautions for the NERR and Responders.

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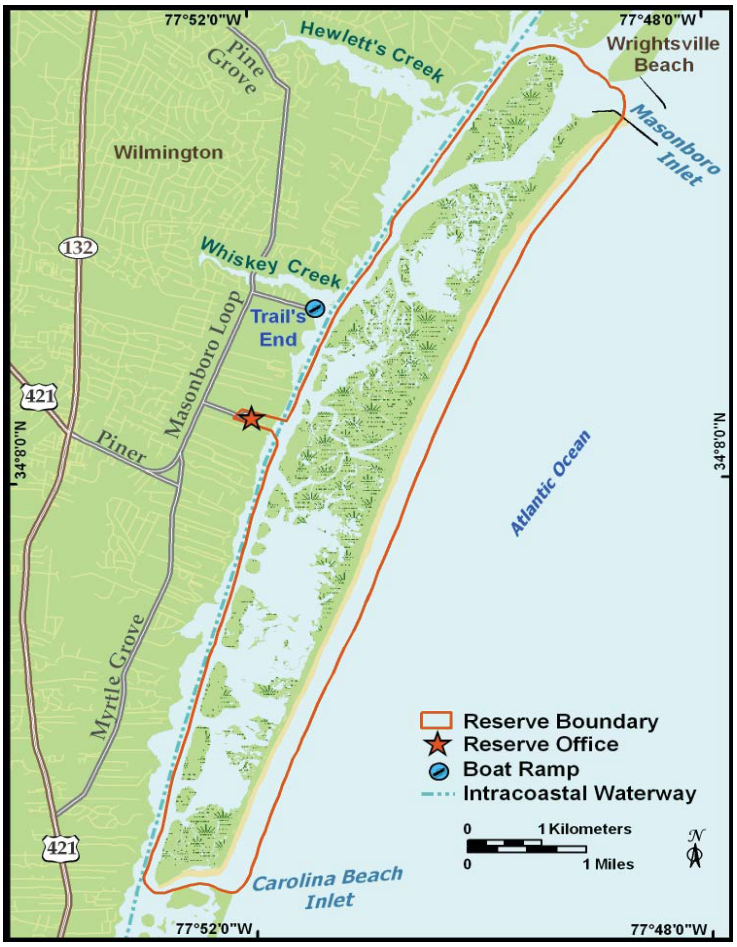

Notes:

For additional information, consult:

NERR Manager (Emergency Manager) Rebecca Ellin: 910-665-9757
NERR CTP Coordinator (Emergency Training and Exercise Coordinator) Whitney Jenkins: 252-838-0882
Masonboro Island Reserve Site Manager (Emergency Risk Manager and Capability Coordinator) Hope Sutton: 910-962-2998
NERR Management Plan and GIS Maps – information on NERR habitat, species, access, water depths
USCG Sector Mobile Geographic Response Plans – planned protection strategies for oil spills, coastal maps, sensitive areas. Available at:

Add/delete new precautions as necessary for an incident. May also be laminated for reuse.

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

PROTECT IF AT ALL POSSIBLE – TAKE PRECAUTIONS TO AVOID INJURY

Highly Sensitive Habitats and Species – Protect

Saltmarsh – Sensitive habitat - minimize walking, avoid anchoring, reduce wake to minimize edge erosion.

Oyster Reef – Sensitive habitat important to juvenile fish and shorebirds. Can be submerged or partially exposed depending on tides.

Dune System – Sensitive to disturbance – avoid topographic alteration and disturbance of plants and plant roots.

Sea Turtles – Threatened sea turtles nest on the ocean beach between May and August. Hatchlings emerge between July and October.

Shorebird Nesting – Least terns, American oystercatchers, and other shorebirds nest and raise young on the open sand of the beach and back dunes between April and August.

Listed Plants – Protected plant species include seabeach amaranth (pictures), tough bumelia, and dune blue curls. Reserve staff can provide additional information.

Highly Sensitive – Protect

Diamondback Terrapin – Species of special concern. Avoid eggs/nests on dry land (April - September). Avoid turtles in waterways.

Invasive Plant - Do Not Transport

Phragmites – Stands of phragmites occur primarily on dredge spoil islands and southern tip of the island.

Beach Vitex – Individual occurrences of this plant exist in open sandy areas in the back dune areas. It has gray green foliage and a distinctive spicy fragrance.

Report sightings, avoid moving, and wash equipment when leaving an infested area.

Hazards/Dangers – Avoid

Oyster reefs/Mud flats – Navigation in back bay areas can be limited by oyster reef and mud flat areas during lower tides. Reserve staff can provide information about navigable routes.

Poisonous/Hazardous Plants – Numerous plants at the site are either poisonous or have sharp spines, thorns, or barbs. Reserve staff can provide more information.

Heat/Sun and Insects – Responders should protect themselves from heat/sun and potential biting insects. Reserve staff can provide more information.

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Zeke's Island Reserve

Use this as a quick reference that can be marked on and handed to a responder, who is likely to be unaware of natural resource considerations at the NERR. Like any "visitor," responders need a quick visual aid to alert them to danger, to show them areas and species to protect, and to illustrate invasive species to avoid relocating. **Front:** Locational map, notes, and emergency contacts. **Back:** Emergency precautions for the NERR and Responders.

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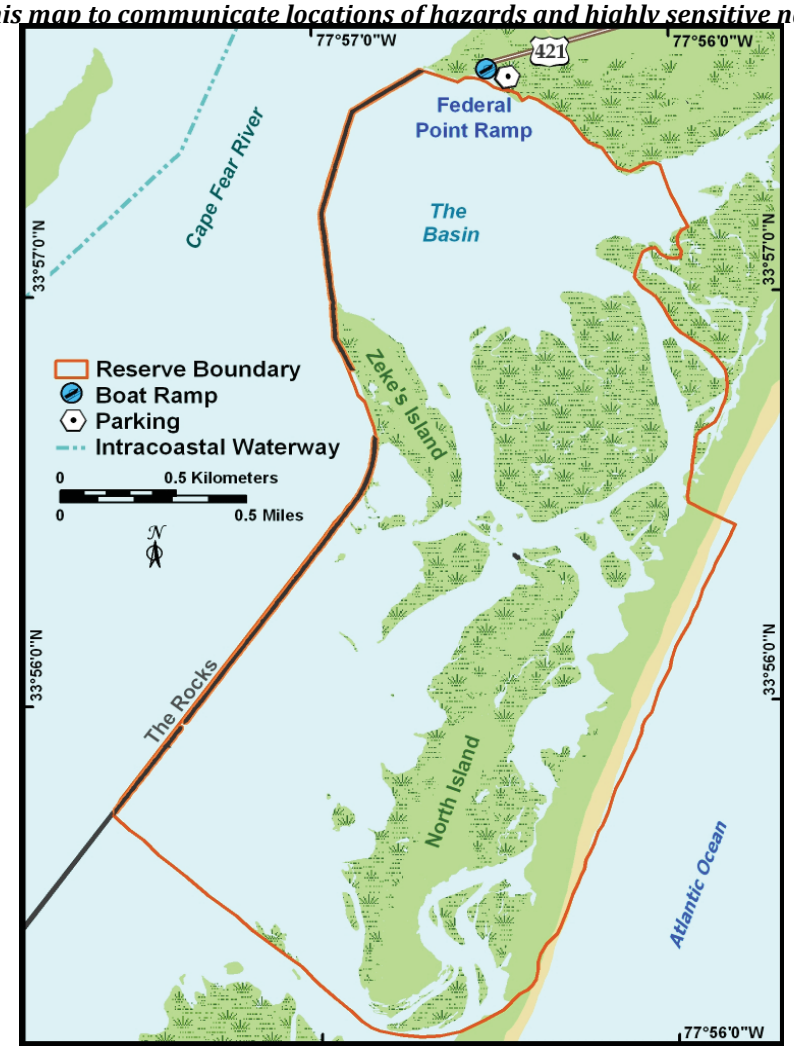

Notes:

For additional information, consult:
NERR Manager (Emergency Manager) Rebecca Ellin: 910-665-9757
NERR CTP Coordinator (Emergency Training and Exercise Coordinator) Whitney Jenkins: 252-838-0882
Masonboro Island Reserve Site Manager (Emergency Risk Manager and Capability Coordinator) Hope Sutton: 910-962-2998
NERR Management Plan and GIS Maps – information on NERR habitat, species, access, water depths
USCG Sector Mobile Geographic Response Plans – planned protection strategies for oil spills, coastal maps, sensitive areas. Available at:

Add/delete new precautions as necessary for an incident. May also be laminated for reuse.

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

PROTECT IF AT ALL POSSIBLE – TAKE PRECAUTIONS TO AVOID INJURY

Highly Sensitive Habitats and Species – Protect

Saltmarsh – Sensitive habitat - minimize walking, avoid anchoring, reduce wake to minimize edge erosion.

Oyster Reef – Sensitive habitat important to juvenile fish and shorebirds. Can be submerged or partially exposed depending on tides.

Dune System – Sensitive to disturbance – avoid topographic alteration and disturbance of plants and plant roots.

Sea Turtles – Threatened sea turtles nest on the ocean beach between May and August. Hatchlings emerge between July and October.

Shorebird Nesting – Least terns, American oystercatchers, and other shorebirds nest and raise young on the open sand of the beach and back dunes between April and August.

Listed Plants – Protected plant species include seabeach amaranth (pictures), tough bumelia, and dune blue curls. Reserve staff can provide additional information.

Highly Sensitive – Protect

Diamondback Terrapin – Species of special concern. Avoid eggs/nests on dry land (April - September). Avoid turtles in waterways.

Invasive Plant - Do Not Transport

Phragmites – Stands of phragmites occur primarily on dredge spoil islands and southern tip of the island.

Beach Vitex – Individual occurrences of this plant exist in open sandy areas in the back dune areas. It has gray green foliage and a distinctive spicy fragrance.

Report sightings, avoid moving, and wash equipment when leaving an infested area.

Hazards/Dangers – Avoid

Oyster reefs/Mud flats – Navigation in back bay areas can be limited by oyster reef and mud flat areas during lower tides. Reserve staff can provide information about navigable routes.

Heat/Sun and Insects – Responders should protect themselves from heat/sun and potential biting insects. Reserve staff can provide more information.

The Rocks – A constructed rock wall on the western boundary can be submerged at high tide and should not be used for access.

List of ICS Forms

The following ICS Forms are available on the FEMA website at http://training.fema.gov/EMIWeb/IS/ICSResource/icsforms.htm

Notes:

In the following table, the ICS Forms with an asterisk (*) are typically included in an IAP. Forms identified with two asterisks (**) are supplemental forms that could be used in an IAP depending on the needs and size of the incident.
The other ICS Forms are used in the ICS process for incident management activities, but are not typically included in an IAP.
The date and time entered in the form blocks should be determined by the Incident Command or Unified Command. Local time is typically used.

ICS Form #:	Form Title:	Typically Prepared by:
Form 201 (Word Fillable)	**Incident Briefing**	Initial Incident Commander
*Form 202 (Word Fillable)	**Incident Objectives**	Planning Section Chief
*Form 203 (Word Fillable)	**Organization Assignment List**	Resources Unit Leader
*Form 204 (Word Fillable)	**Assignment List**	Resources Unit Leader and Operations Section Chief
*Form 205 (Word Fillable)	**Incident Radio Communications Plan**	Communications Unit Leader
**Form 205A (Word Fillable)	**Communications List**	Communications Unit Leader
*Form 206 (Word Fillable)	**Medical Plan**	Medical Unit Leader
Form 207 (Word Fillable)	**Incident Organization Chart** *(wall-mount size, optional 8.5" x 14")*	Resources Unit Leader
**Form 208 (Word Fillable)	**Safety Message/Plan**	Safety Officer
Form 209 (Word Fillable)	**Incident Status Summary**	Situation Unit Leader
Form 210 (Word Fillable)	**Resource Status Change**	Communications Unit Leader
Form 211 (Word Fillable)	**Incident Check-In List** *(optional 8.5"x14" and 11"x17")*	Resources Unit Leader/Check-In Recorder
Form 213 (Word Fillable)	**General Message** *(3-part form)*	Any Message Originator
Form 214 (Word Fillable)	**Activity Log** *(optional 2-sided form)*	All Sections and Units
Form 215 (Word Fillable)	**Operational Planning Worksheet** *(optional 8.5"x14" and 11"x17")*	Operations Section Chief
Form 215A (Word Fillable)	**Incident Action Plan Safety Analysis**	Safety Officer
Form 218 (Word Fillable)	**Support Vehicle/Equipment Inventory** *(optional 8.5"x14" and 11"x17")*	Ground Support Unit
Form 219s (Word Fillable)	**Resource Status Card (T-Card)** *(may be printed on card stock)*	Resources Unit
Form 220 (Word Fillable)	**Air Operations Summary Worksheet**	Operations Section Chief or Air Branch Director
Form 221 (Word Fillable)	**Demobilization/Check-Out**	Demobilization Unit Leader
Form 225 (Word Fillable)	**Incident Personnel Performance Rating**	Supervisor at the Incident

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Incident Briefing (ICS 201)

1. Incident Name:	2. Incident Number:	3. Date/Time Initiated: Date: Date Time: HHMM

4. Map/Sketch (include sketch, showing the total area of operations, the incident site/area, impacted and threatened areas, overflight results, trajectories, impacted shorelines, or other graphics depicting situational status and resource assignment)**:**

5. Situation Summary and Health and Safety Briefing (for briefings or transfer of command)**:** Recognize potential incident Health and Safety Hazards and develop necessary measures (remove hazard, provide personal protective equipment, warn people of the hazard) to protect responders from those hazards.

6. Prepared by: Name: Position/Title: Signature: _____

ICS 201, Page 1 Date/Time: Date

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Incident Briefing (ICS 201)

1. Incident Name:	2. Incident Number:	3. Date/Time Initiated: Date: Date Time: HHMM

7. Current and Planned Objectives:

8. Current and Planned Actions, Strategies, and Tactics:

Time:	Actions:
HHMM	
HHMM	
HHMM	
HHMM	
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HHMM	
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HHMM	

6. Prepared by: Name: Position/Title: Signature: _____

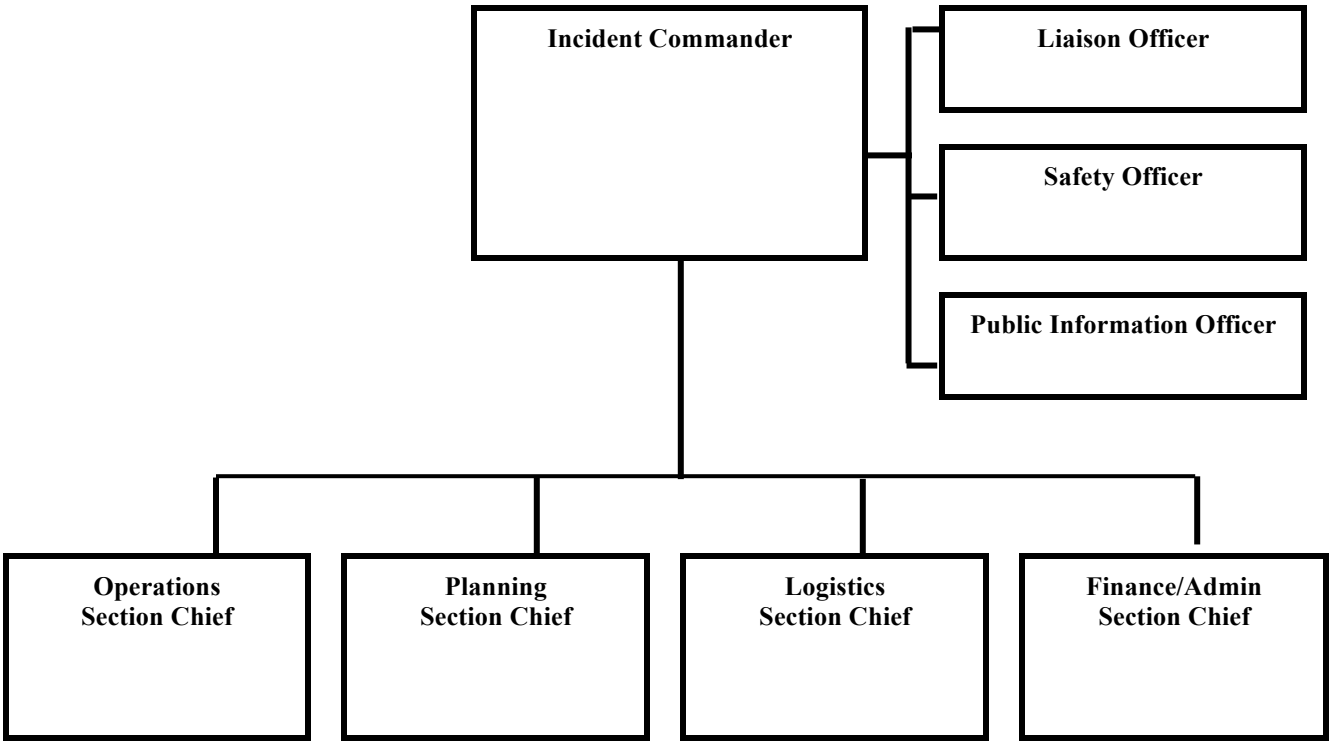
ICS 201, Page 2 Date/Time: Date

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Incident Briefing (ICS 201)

1. Incident Name:	2. Incident Number:	3. Date/Time Initiated: Date: Date Time: HHMM

9. Current Organization (fill in additional organization as appropriate)**:**



6. Prepared by:	Name:	Position/Title:	Signature:
ICS 201, Page 3		Date/Time: Date	

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Incident Briefing (ICS 201)

1. Incident Name:	2. Incident Number:	3. Date/Time Initiated: Date: DateTime: HHMM

10. Resource Summary:

Resource	Resource Identifier	Date/Time Ordered	ETA	Arrived	Notes (location/assignment/status)
				☒	
				☐	
				☐	
				☐	
				☐	
				☐	
				☐	
				☐	
				☐	
				☐	
				☐	
				☐	

6. Prepared by: Name:	Position/Title:	Signature: _____
ICS 201, Page 4	Date/Time: Date	

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

ICS 201

Incident Briefing: Instructions for preparing the form

Purpose. The Incident Briefing (ICS 201) provides the Incident Commander (and the Command and General Staffs) with basic information regarding the incident situation and the resources allocated to the incident. In addition to a briefing document, the ICS 201 also serves as an initial action worksheet. It serves as a permanent record of the initial response to the incident.

Preparation. The briefing form is prepared by the Incident Commander for presentation to the incoming Incident Commander along with a more detailed oral briefing.

Distribution. Ideally, the ICS 201 is duplicated and distributed before the initial briefing of the Command and General Staffs or other responders as appropriate. The "Map/Sketch" and "Current and Planned Actions, Strategies, and Tactics" sections (pages 1–2) of the briefing form are given to the Situation Unit, while the "Current Organization" and "Resource Summary" sections (pages 3–4) are given to the Resources Unit.

Notes:

The ICS 201 can serve as part of the initial Incident Action Plan (IAP).

If additional pages are needed for any form page, use a blank ICS 201 and repaginate as needed.

Block #	Block Title	Instructions
1	**Incident Name**	Enter the name assigned to the incident.
2	**Incident Number**	Enter the number assigned to the incident.
3	**Date/Time Initiated** Date, Time	Enter date initiated (month/day/year) and time initiated (using the 24-hour clock).
4	**Map/Sketch** (include sketch, showing the total area of operations, the incident site/area, impacted and threatened areas, overflight results, trajectories, impacted shorelines, or other graphics depicting situational status and resource assignment)	Show perimeter and other graphics depicting situational status, resource assignments, incident facilities, and other special information on a map/sketch or with attached maps. Utilize commonly accepted ICS map symbology. If specific geospatial reference points are needed about the incident's location or area outside the ICS organization at the incident, that information should be submitted on the Incident Status Summary (ICS 209). North should be at the top of page unless noted otherwise.
5	**Situation Summary and Health and Safety Briefing (**for briefings or transfer of command): Recognize potential incident Health and Safety Hazards and develop necessary measures (remove hazard, provide personal protective equipment, warn people of the hazard) to protect responders from those hazards.	Self-explanatory.

Block #	Block Title	Instructions
6	**Prepared by** Name Position/Title Signature Date/Time	Enter the name, ICS position/title, and signature of the person preparing the form. Enter date (month/day/year) and time prepared (24-hour clock).
7	**Current and Planned Objectives**	Enter the objectives used on the incident and note any specific problem areas.
8	**Current and Planned Actions, Strategies, and Tactics** Time Actions	Enter the current and planned actions, strategies, and tactics and time they may or did occur to attain the objectives. If additional pages are needed, use a blank sheet or another ICS 201 (Page 2), and adjust page numbers accordingly.
9	**Current Organization** (fill in additional organization as appropriate) Incident Commander(s) Liaison Officer Safety Officer Public Information Officer Planning Section Chief Operations Section Chief Finance/Administration Section Chief Logistics Section Chief	Enter on the organization chart the names of the individuals assigned to each position. Modify the chart as necessary, and add any lines/spaces needed for Command Staff Assistants, Agency Representatives, and the organization of each of the General Staff Sections. If Unified Command is being used, split the Incident Commander box. Indicate agency for each of the Incident Commanders listed if Unified Command is being used.
10	**Resource Summary**	Enter the following information about the resources allocated to the incident. If additional pages are needed, use a blank sheet or another ICS 201 (Page 4), and adjust page numbers accordingly.
	Resource	Enter the number and appropriate category, kind, or type of resource ordered.
	Resource Identifier	Enter the relevant agency designator and/or resource designator (if any).
	Date/Time Ordered	Enter the date (month/day/year) and time (24-hour clock) the resource was ordered.
	ETA	Enter the estimated time of arrival (ETA) to the incident (use 24-hour clock).
	Arrived	Enter an "X" or a checkmark upon arrival to the incident.
	Notes (location/ assignment/status)	Enter notes such as the assigned location of the resource and/or the actual assignment and status.

Appendix K- Maps and Other Information

DCM DRP – Can be accessed at NCNERR headquarters
UNCW Hurricane Preparedness - http://uncw.edu/itsd/besafe/hurricane.html
NOAA CCFHR Hurricane Plan – Can be accessed at NCNERR headquarters
Core/buffer maps and description – Can be accessed at NCNERR headquarters

NORTH CAROLINA COASTAL RESERVE & NATIONAL ESTUARINE RESEARCH RESERVE

Appendix L - References

Carteret County Department of Emergency Services. 2014. Carteret County Emergency Operations for All Hazards. Updated August 8 2014. Accessed at: http://www.carteretcountync.gov/DocumentCenter/Home/View/1121

Currituck County Emergency Management Department. 2002. Currituck County Emergency Operations Plan. Updated July 27 2009. Accessed at: http://ncemplans.us/currituck/webver/FCMainpage.htm

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NOAA. Florida Department of Environmental Protection. 2013. *Apalachicola National Estuarine Research Reserve, Disaster Response Plan.*

NOAA. Florida Department of Environmental Protection. 2013. *Rookery Bay National Estuarine Research Reserve, Disaster Response Plan.*

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Appendix M - Glossary

This glossary includes terms focusing primarily on emergency management. References used for the terms are included at the end of this appendix. Terms are largely presented as provided in the source documents for consistency with relevant standards and frameworks.

AFTER-ACTION REPORT (AAR): Reports that summarize and analyze performance in both exercises and actual events. The reports for exercises may also evaluate achievement of the selected exercise objectives and demonstration of the overall capabilities being exercised. (FEMA 2007)

AREA COMMAND: (also called, Unified Area Command) An organization established to oversee the management of (1) multiple incidents that are each being handled by an ICS organization, or (2) large or multiple incidents to which several Incident Management Teams have been assigned. Area Command has the responsibility to set overall strategy and priorities, allocate critical resources according to priorities, ensure that incidents are properly managed, and ensure that objectives are met and strategies followed. Area Command becomes Unified Area Command when incidents are multijurisdictional. Area Command may be established at an emergency operations center facility or at some location other than an Incident Command Post. (FEMA Undated)

AREA COMMITTEE (AC): Under the Clean Water Act, the entity appointed by the President consisting of members from qualified personnel of federal, state, and local agencies with responsibilities that include preparing an area contingency plan for an area designated by the President. (NCP 1994)

AREA CONTINGENCY PLAN (ACP): Under the Clean Water Act, the plan prepared by an Area Committee that is developed to be implemented in conjunction with the National Contingency Plan (NCP) and Regional Contingency Plan (RCP), in part to address removal of a worst case discharge of an oil or hazardous substance, and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near an area designated by the President. (NCP 1994).

ASSIGNED RESOURCES: Resources checked in and assigned work tasks on an incident. (ICS Undated)

ASSIGNMENTS: Tasks given to resources to perform within a given operational period, based upon tactical objectives in the Incident Action Plan. (ICS Undated)

ASSISTING AGENCY: An agency or organization providing personnel, services, or other resources to the agency with direct responsibility for incident management. (FEMA Undated)

AUTOMATED EXTERNAL DEFIBRILLATOR (AED): A portable device that checks the heart rhythm. If needed, it can send an electric shock to the heart to try to restore a normal rhythm. AEDs are used to treat sudden cardiac arrest (SCA). (NIH 2013)

AVAILABLE RESOURCES: Resources assigned to an incident, checked in, and available for a mission assignment, normally located in a Staging Area (note: these are categorized as emergency capabilities for the purposes of this Disaster Response Plan to avoid confusion with the term "natural resources." (FEMA Undated)

BRANCH: The organizational level having functional or geographic responsibility for major parts of incident operations. The Branch level is organizationally between Section and Division/Group in the Operations Section, and between Section and Units in the Logistics Section. Branches are identified by the use of Roman Numerals or by functional name (e.g., medical, security, etc.). (ICS Undated)

CARDIO-PULMONARY RESPIRATION (CPR): a procedure designed to restore normal breathing after cardiac arrest that includes the clearance of air passages to the lungs, mouth-to-mouth method of artificial respiration, and heart massage by the exertion of pressure on the chest. (Merriam-Webster 2013)

CHECK-IN: The process whereby resources first report to an incident. Check-in locations include: Incident Command Post (Resources Unit), Incident Base, Camps, Staging Areas, Helibases, Helispots, and Division Supervisors (for direct line assignments). (ICS Undated)

COASTAL ZONE MANAGEMENT ACT (CZMA): Administered by NOAA's Office of Ocean and Coastal Resource Management (OCRM), the CZMA provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation.

The CZMA outlines two national programs, the National Coastal Zone Management Program and the National Estuarine Research Reserve System. The 34 coastal programs aim to balance competing land and water issues in the coastal zone, while estuarine reserves serve as field laboratories to provide a greater understanding of estuaries and how humans impact them. The overall program objectives of CZMA remain balanced to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." (NOAA 2012)

COMMAND: The act of directing and/or controlling resources by virtue of explicit legal, agency, or delegated authority. May also refer to the Incident Commander. (ICS Undated)

COMMAND POST: See Incident Command Post.

COMMAND STAFF: The Command Staff consists of the Public Information Officer, Safety Officer, and Liaison Officer. They report directly to the Incident Commander. They may have an Assistant or Assistants, as needed. (FEMA Undated)

COMMUNICATIONS UNIT: An organizational unit in the Logistics Section responsible for providing communication services at an incident. A Communications Unit may also be a facility (e.g., a trailer or mobile van) used to provide the major part of an Incident Communications Center. (ICS Undated)

COMPENSATION UNIT/CLAIMS UNIT: Functional unit within the Finance/Administration Section responsible for financial concerns resulting from property damage, injuries, or fatalities at the incident. (ICS Undated)

CONTINUITY OF OPERATIONS PLAN (COOP): The COOP outlines essential functions; orders of succession; delegations of authority; continuity facilities; continuity communications; vital records management; human capital; tests, training, and exercises; devolution of control and direction; and reconstitution. The plan could be activated in response to a wide range of events or situations – from a fire in the building; to a natural disaster; to the threat or occurrence of a terrorist attack. Any event that makes it impossible for employees to work in their regular facility could result in the activation of the continuity plan. Continuity planning is the practice of ensuring the execution of essential functions through all circumstances. (FEMA 2013c)

COOPERATING AGENCY: An agency supplying assistance other than direct operational or support functions or resources to the incident management effort. (FEMA Undated)

COORDINATION: The process of systematically analyzing a situation, developing relevant information, and informing appropriate command authority of viable alternatives for selection of the most effective combination of available resources to meet specific objectives. The coordination process (which can be either intra- or interagency) does not involve dispatch actions. However, personnel responsible for coordination may perform command or dispatch functions within the limits established by specific agency delegations, procedures, legal authority, etc. (FEMA Undated)

COORDINATION CENTER: A facility that is used for the coordination of agency or jurisdictional resources in support of one or more incidents. (FEMA Undated)

COST SHARING AGREEMENTS: Agreements between agencies or jurisdictions to share designated costs related to incidents. Cost sharing agreements are normally written but may also be oral between authorized agency or jurisdictional representatives at the incident. (FEMA Undated)

COST UNIT: Functional unit within the Finance/Administration Section responsible for tracking costs, analyzing cost data, making cost estimates, and recommending cost-saving measures. (ICS Undated)

DEPUTY: Deputy: A fully qualified individual who, in the absence of a superior, could be delegated the authority to manage a functional operation or perform a specific task. In some cases, a Deputy could act as relief for a superior and therefore must be fully qualified in the position. Deputies can be assigned to the Incident Commander, General Staff, and Branch Directors. (FEMA Undated)

DEMOBILIZATION UNIT: Functional unit within the Planning Section responsible for assuring orderly, safe, and efficient demobilization of incident resources. (ICS Undated)

DIRECTOR: The ICS title for individuals responsible for supervision of a Branch. (ICS Undated)

DISASTER: Incidents that result in profound loss, recovery from which can require months, years, or even decades. (Disaster Response Plan Usage)

DIVISION: Divisions are used to divide an incident into geographical areas of operation. A Division is located within the ICS organization between the Branch and the Task

Force/Strike Team (See Group). Divisions are identified by alphabetic characters for horizontal applications and, often, by floor numbers when used in buildings. (ICS Undated)

DOCUMENTATION UNIT: Functional unit within the Planning Section responsible for collecting, recording, and safeguarding all documents relevant to the incident. (ICS Undated)

DRILL: A drill is a type of HSEEP exercise. It is coordinated, supervised activity usually employed to test a single specific operation or function within a single entity (e.g., a fire department conducts a decontamination drill).

EMERGENCY: Absent a Presidentially declared emergency, any incident(s), human-caused or natural, that requires responsive action to protect life or property. Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, an emergency means any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement State and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States. (FEMA Undated)

EMERGENCY MANAGEMENT COORDINATOR/DIRECTOR: The individual within each political subdivision that has coordination responsibility for jurisdictional emergency management. (ICS Undated)

EMERGENCY MEDICAL TECHNICIAN (EMT): A health-care specialist with particular skills and knowledge in pre-hospital emergency medicine. (ICS, Undated)

EMERGENCY OPERATIONS CENTER (EOC): Emergency Operations Centers (EOCs): The physical location at which the coordination of information and resources to support domestic incident management activities normally takes place. An EOC may be a temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction. EOCs may be organized by major functional disciplines (e.g., fire, law enforcement, and medical services), by jurisdiction (e.g., Federal, State, regional, county, city, tribal), or some combination thereof. (FEMA Undated)

EMERGENCY OPERATIONS PLAN: The plan that each jurisdiction has and maintains for responding to appropriate hazards. (ICS Undated)

ENDANGERED SPECIES: The classification provided to an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range. (FWS 2013a)

ENVIRONMENTAL SENSITIVITY INDEX (ESI) MAP: ESI maps provide a concise summary of coastal resources that are at risk if an oil spill occurs nearby. Examples of at-risk resources include biological resources (such as birds and shellfish beds), sensitive shorelines (such as marshes and tidal flats), and human-use resources (such as public beaches and parks).

When an oil spill occurs, ESI maps can help responders meet one of the main response objectives: reducing the environmental consequences of the spill and the cleanup efforts.

Additionally, ESI maps can be used by planners—before a spill happens—to identify vulnerable locations, establish protection priorities, and identify cleanup strategies. (NOAA 2013b)

ESTUARY/ESTUARINE: In the most general terms, an estuary is an ecosystem, comprising both the biological and physical environment, which has developed in a region where rivers meet the sea and fresh flowing river water mingles with tidal salt water to become brackish, or partly salty. However, there are also several types of wholly freshwater ecosystems that have many similar characteristics to what we think of as traditional brackish estuaries. Estuaries are connected by water to many different surrounding environments (oceans, lakes, forests, grassy plains) as well as nearby human communities, and they are therefore affected by what takes place in those environments whether it be natural processes or human activities. (NOAA 2013c)

EVACUATION: To withdraw from a place in an organized way especially for protection. (Merriam-Webster 2013)

EVENT: A planned, non-emergency activity. ICS can be used as the management system for a wide range of events, e.g., parades, concerts, or sporting events. (ICS Undated)

FACILITIES UNIT: Functional unit within the Support Branch of the Logistics Section that provides fixed facilities for the incident. These facilities may include the Incident Base, feeding areas, sleeping areas, sanitary facilities, etc. (ICS Undated)

FIELD OPERATIONS GUIDE: A pocket-size manual of instructions on the application of the Incident Command System. (ICS Undated)

FINANCE/ADMINISTRATION SECTION: The Section responsible for all incident costs and financial considerations. Includes the Time Unit, Procurement Unit, Compensation/Claims Unit, and Cost Unit. (ICS Undated)

FOOD UNIT: Functional unit within the Service Branch of the Logistics Section responsible for providing meals for incident personnel. (ICS Undated)

FUNCTION: In ICS, function refers to the five major activities in the ICS, i.e., Command, Operations, Planning, Logistics, and Finance/Administration. The term function is also used when describing the activity involved, e.g., the planning function. (ICS Undated)

FUNCTIONAL EXERCISE (FE): A functional exercise is a type of HSEEP exercise. It examines and/or validates the coordination, command, and control between various multi-agency coordination centers (e.g., emergency operation center, joint field office, etc.). A functional exercise does not involve any "boots on the ground" (i.e., first responders or emergency officials responding to an incident in real time). (FEMA 2013a)

FULL-SCALE EXERCISE (FSE): A full-scale exercise is a multi-agency, multi-jurisdictional, multi-discipline exercise involving functional (e.g., joint field office, emergency operation centers, etc.) and "boots on the ground" response (e.g., firefighters decontaminating mock victims). (FEMA 2013a)

GAME: A game is a type of HSEEP exercise. It is a simulation of operations that often involves two or more teams, usually in a competitive environment, using rules, data, and procedure designed to depict an actual or assumed real-life situation. (FEMA 2013a)

GENERAL STAFF: The group of incident management personnel reporting to the Incident Commander. They may each have a deputy, as needed. The General Staff consists of: Operations Section Chief, Planning Section Chief, Logistics Section Chief, Finance/Administration Section Chief (ICS Undated)

GEOGRAPHIC RESPONSE PLAN (GRP): A site-specific strategy for the initial response to a spill of oil or oil products on water. (Ellis 2009)

GROUP: Groups are established to divide the incident into functional areas of operation. Groups are composed of resources assembled to perform a special function not necessarily within a single geographic division (See Division). Groups are located between Branches (when activated) and Resources in the Operations Section. (FEMA Undated)

HARMFUL ALGAL BLOOM (HAB): A harmful algal bloom (HAB), also known as a red tide, is the proliferation of toxic nuisance algae that cause a negative impact to natural resources or humans. Currently 85 toxic microalgal species have been documented; of these, 37 live in Gulf of Mexico waters. (EPA 2013f)

HAZARD: Something that is potentially dangerous or harmful, often the root cause of an unwanted outcome (FEMA Undated)

HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA): Hazard Identification is the process of determining whether exposure to a stressor can cause an increase in the incidence of specific adverse health effects (e.g., cancer, birth defects) and whether the adverse health effect is likely to occur in humans. In the case of chemical stressors, the process examines the available scientific data for a given chemical (or group of chemicals) and develops a weight of evidence to characterize the link between the negative effects and the chemical agent. Risk assessment is used to characterize the nature and magnitude of health risks to humans (e.g., residents, workers, recreational visitors) and ecological receptors (e.g., birds, fish, wildlife) from chemical contaminants and other stressors that may be present in the environment. Risk managers use this information to help them decide how to protect humans and the environment from stressors or contaminants. (EPA 2013e) *See also FEMA's Threat and Hazard Identification and Risk Assessment (THIRA).*

HAZARDOUS MATERIALS (HAZMAT): Hazardous and toxic substances are defined as those chemicals present in the workplace which are capable of causing harm. In this definition, the term "chemicals" includes dusts, mixtures, and common materials such as paints, fuels, and solvents. OSHA currently regulates exposure to approximately 400 substances. The OSHA Chemical Sampling Information file contains listings for approximately 1500 substances; the Environmental Protection Agency's (EPA's) Toxic Substance Control Act (TSCA) Chemical Substances Inventory lists information on more than 62,000 chemicals or chemical substances; some libraries maintain files of material safety data sheets (MSDS) for more than 100,000 substances. (OSHA 2013b)

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (HAZWOPER): Because of the seriousness of the safety and health hazards related to hazardous waste operations and emergency response, the Occupational Safety and Health Administration (OSHA) issued its Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, Title 29 *Code of Federal Regulations* (CFR) Parts 1910.120 and 1926.65 (*see* 54 *Federal Register* 9294-9336, March 6, 1989) to protect employees in this environment and to help them handle hazardous substances safely and effectively.

The HAZWOPER standard covers all employers performing the following three general categories of work operations:

- Hazardous waste site cleanup operations [paragraphs (b)-(o)] (e.g., SUPERFUND cleanup),
- Operations involving hazardous waste that are conducted at treatment, storage, and disposal (TSD) facilities [paragraph (p)] (e.g., landfill that accepts hazardous waste), and
- Emergency response operations involving hazardous substance releases [paragraph (q)] (e.g., chemical spill at a manufacturing plant). (OSHA 2008)

HOMELAND SECURITY EXERCISE AND EVALUATION PROGRAM (HSEEP): The HSEEP is a capabilities and performance-based exercise program that provides a standardized methodology and terminology for exercise design, development, conduct, evaluation, and improvement planning. HSEEP exercises include workshops, seminars, games, tabletop exercises, functional exercises, and full-scale exercises.
The HSEEP is maintained by the Federal Emergency Management Agency's National Preparedness Directorate, Department of Homeland Security. (FEMA 2013a)

INCIDENT: An occurrence or event, natural or human-caused, which requires an emergency response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response. (FEMA Undated)

INCIDENT ACTION PLAN: Contains objectives reflecting the overall incident strategy and specific tactical actions and supporting information for the next operational period. The Plan may be oral or written. When written, the Plan may have a number of forms as attachments (e.g., traffic plan, safety plan, communications plan, map, etc.). (ICS Undated)

INCIDENT COMMANDER: The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site. (FEMA Undated)

INCIDENT COMMAND POST (ICP): The location at which the primary command functions are executed. The ICP may be collocated with the incident base or other incident facilities. (ICS Undated)

INCIDENT COMMAND SYSTEM (ICS): A standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations. (FEMA Undated)

INCIDENT MANAGEMENT TEAM: The Incident Commander and appropriate Command and General Staff personnel assigned to an incident. (ICS Undated)

INCIDENT OBJECTIVES: Statements of guidance and direction necessary for the selection of appropriate strategy(s), and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. Incident objectives must be achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives. (ICS Undated)

INCIDENT TYPES: Incidents are categorized by five types based on complexity. Type 5 incidents are the least complex and Type 1 the most complex. (FEMA Undated)

INFORMATION OFFICER: A member of the Command Staff responsible for interfacing with the public and media or with other agencies requiring information directly from the incident. There is only one Information Officer per incident. The Information Officer may have assistants. (ICS Undated)

INITIAL ACTION: The actions taken by resources which are the first to arrive at an incident. (ICS Undated)

INITIAL RESPONSE: Resources initially committed to an incident. (ICS Undated)

INVASIVE SPECIES: An invasive species is one that is not native to an ecosystem and which causes, or is likely to cause, economic or environmental harm or harm to human health. In addition to the many invasive species from outside the U.S., there are many species from within the U.S. that are invasive in other parts of the country. (FWS 2013b)

JURISDICTION: The range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authority for incident mitigation. Jurisdictional authority at an incident can be political/geographical (e.g., city, county, state, or federal boundary lines) or functional (e.g., police department, health department, etc.). (See Multijurisdiction.) (ICS Undated)

JURISDICTIONAL AGENCY: The agency having jurisdiction and responsibility for a specific geographical area, or a mandated function. (ICS Undated)

LEADER: The ICS title for an individual responsible for a Task Force, Strike Team, or functional unit. (ICS, Undated)

LIAISON OFFICER: A member of the Command Staff responsible for coordinating with representatives from cooperating and assisting agencies. (ICS Undated)

LISTED SPECIES: A species, subspecies, or distinct vertebrate population segment that has been added to the Federal lists of Endangered and Threatened Wildlife and Plants as they appear in sections 17.11 and 17.12 of Title 50 of the Code of Federal Regulations (50 CFR 17.11 and 17.12). (FWS 2013a)

LOGISTICS SECTION: The Section responsible for providing facilities, services, and materials for the incident. (ICS Undated)

LIFE-SAFETY: Refers to the joint consideration of both the life and physical well-being of individuals. (ICS Undated)

MANAGERS: Individuals within ICS organizational units that are assigned specific managerial responsibilities, e.g., Staging Area Manager or Camp Manager. (ICS Undated)

MANAGEMENT BY OBJECTIVES: In ICS, this is a top-down management activity which involves a three-step process to achieve the incident goal. The steps are: establishing the incident objectives, selection of appropriate strategy(s) to achieve the objectives, and the tactical direction associated with the selected strategy. Tactical direction includes: selection of tactics, selection of resources, resource assignments, and performance monitoring. (ICS Undated)

MEDICAL UNIT: Functional unit within the Service Branch of the Logistics Section responsible for the development of the Medical Emergency Plan, and for providing emergency medical treatment of incident personnel. (ICS Undated)

MITIGATION: Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. Mitigation is taking action *now*—before the next disaster—to reduce human and financial consequences later (analyzing risk, reducing risk, insuring against risk). (FEMA 2013b)

MULTI-AGENCY INCIDENT: An incident where one or more agencies assist a jurisdictional agency or agencies. May be single or unified command. (ICS Undated)

MULTI-AGENCY COORDINATION (MAC): A generalized term which describes the functions and activities of representatives of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and use of critical resources. The MAC organization is not a part of the on-scene ICS and is not involved in developing incident strategy or tactics. (ICS Undated)

MULTI-AGENCY COORDINATION SYSTEM (MACS): The combination of personnel, facilities, equipment, procedures, and communications integrated into a common system. When activated, MACS has the responsibility for coordination of assisting agency resources and support in a multi-agency or multijurisdictional environment. A MAC Group functions within the MACS. (ICS Undated)

MULTIJURISDICTION INCIDENT: An incident requiring action from multiple agencies that have a statutory responsibility for incident mitigation. In ICS these incidents will be managed under Unified Command. (ICS Undated)

MUTUAL AID AGREEMENT: Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment. (ICS Undated)

NATIONAL CONTINGENCY PLAN (NCP): The National Oil and Hazardous Substances Pollution Contingency Plan, commonly referred to as the NCP, is the Federal government's strategy for responding to both oil spills and hazardous substance releases. These requirements outline the steps On-Scene Coordinators must take when responding to situations in which oil is discharged into or upon the navigable waters of the United States, or when hazardous substances, pollutants, or contaminants are released into the environment. (EPA 2013b)

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM (NERRS): The National Estuarine Research Reserve System is a network of 28 areas representing different biogeographic regions of the United States that are protected for long-term research, water-quality monitoring, education and coastal stewardship. Established by the Coastal Zone Management Act of 1972, as amended, the reserve system is a partnership program between the National Oceanic and Atmospheric Administration and the coastal states. NOAA provides funding, national guidance and technical assistance. Each reserve is managed on daily basis by a lead state agency or university, with input from local partners. (NOAA 2013c)

NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS):A system mandated by HSPD-5 that provides a consistent nationwide approach for Federal, State, local, and tribal governments; the private sector; and nongovernmental organizations to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, local, and tribal capabilities, the NIMS includes a core set of concepts, principles, and terminology. HSPD-5 identifies these as the ICS; multiagency coordination systems; training; identification and management of resources (including systems for classifying types of resources); qualification and certification; and the collection, tracking, and reporting of incident information and incident resources. (FEMA Undated)

NATIONAL RESPONSE FRAMEWORK (NRF): A guide to how the Nation conducts all-hazards response. It is built upon scalable, flexible, and adaptable coordinating structures to align key roles and responsibilities across the Nation, linking all levels of government, nongovernmental organizations, and the private sector. It is intended to capture specific authorities and best practices for managing incidents that range from the serious but purely local, to large-scale terrorist attacks or catastrophic natural disasters. (FEMA 2013d)

NATIONAL RESPONSE TEAM (NRT): Response planning and coordination is accomplished at the federal level through the U.S. National Response Team (NRT), an interagency group co-chaired by the EPA and the U.S. Coast Guard (also see NRT Member Roles and Responsibilities for more information on this group). Although the NRT does not respond directly to incidents, it is responsible for three major activities related to managing responses: (1) distributing information; (2) planning for emergencies; and (3)

training for emergencies. The NRT also supports the Regional Response Teams. (EPA 2013a)

NATIONAL WILDLIFE REFUGE: There are two ways that lands in the National Wildlife System are categorized: 1) Code of Federal Regulations definitions and 2) real property classification. In general these lands include refuges, waterfowl production areas, and coordination areas. The Refuge System does not currently include any of the lands identified as Administrative Sites in the property records. Refuge System lands are acquired through a variety of acquisition methods such as withdrawal from the public domain, fee title purchase, transfer of jurisdiction, donation, gift, exchange, and partial interest such as agreements, easements, and leases.

By Fish and Wildlife Service definitions in the Title 50 of the Code of Federal Regulations (CFR), lands within the National Wildlife Refuge System include two major categories – National Wildlife Refuges and Coordination Areas. National Wildlife Refuges are defined as all units of the Refuge System except Coordination Areas. Within the National Wildlife Refuge category, a further distinction is made for the subset of units known as Waterfowl Production Areas. (FWS 2012)

NATURAL RESOURCE: In both CERCLA and OPA, there are two parts to the "natural resources" definition. First, natural resources are defined broadly to include land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources. Second, the resource must belong to, be managed by, held in trust by, appertain to, or otherwise be controlled by the United States, any State, an Indian Tribe, a local government, or a foreign government [CERCLA §101(16); OPA §1001(20)]. (EPA 2013d)

NATURAL RESOURCE DAMAGE ASSESSMENT (NRDA): Natural Resource Trustees conduct NRDAs to calculate the monetary cost of restoring injuries to natural resources that result from releases of hazardous substances or discharges of oil. Damages to natural resources are evaluated by identifying the functions or 'services' provided by the resources, determining the baseline level of the services provided by the injured resource(s), and quantifying the reduction in service levels as a result of the contamination. Regulations for assessing NRD have been promulgated under both CERCLA and OPA.

If natural resources are injured by a discharge or release of a mixture of oil and hazardous substances, the DOI regulations are used. The NOAA regulations are applicable only in assessing damages which may result from discharges of oil. (EPA 2013d)

NATURAL RESOURCE TRUSTEES: CERCLA and OPA authorize the United States, States, and Indian Tribes to act on behalf of the public as Natural Resource Trustees for natural resources under their respective trusteeship [CERCLA §107(f)(1); OPA §1006(c)]. OPA also authorizes foreign governments to act as Trustees [OPA §1006(b)(5)].

Trustees often have information and technical expertise about the biological effects of hazardous substances, as well as the location of sensitive species and habitats that can assist On-Scene Coordinators in characterizing the nature and extent of site-related contamination and impacts. Coordination at the investigation and planning stages provides the Trustees early access to information they need to assess injury to natural resources. This assists Trustees in making early decisions about whether restoration is needed in light

of the response actions, and should generally result in more efficient settlement negotiations and an opportunity to address all liabilities at the site simultaneously. (EPA 2013d)

NAVIGABLE WATERS: The term *navigable waters* encompasses more than bodies of water large enough to accommodate a boat. The term may also include streams, creeks, and wetlands that empty into larger rivers and lakes as well as their adjoining shorelines. (USCG 2013)

OFFICER: The ICS title for the personnel responsible for the Command Staff positions of Safety, Liaison, and Information. (ICS Undated)

OIL POLLUTION ACT OF 1990 (OPA90): The Oil Pollution Act (OPA) was signed into law in August 1990, largely in response to rising public concern following the *Exxon Valdez* incident. The OPA improved the nation's ability to prevent and respond to oil spills by establishing provisions that expand the federal government's ability, and provide the money and resources necessary, to respond to oil spills. The OPA also created the national Oil Spill Liability Trust Fund, which is available to provide up to one billion dollars per spill incident.

In addition, the OPA provided new requirements for contingency planning both by government and industry. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) has been expanded in a three-tiered approach: the Federal government is required to direct all public and private response efforts for certain types of spill events; Area Committees -- composed of federal, state, and local government officials -- must develop detailed, location-specific Area Contingency Plans; and owners or operators of vessels and certain facilities that pose a serious threat to the environment must prepare their own Facility Response Plans.

Finally, the OPA increased penalties for regulatory noncompliance, broadened the response and enforcement authorities of the Federal government, and preserved State authority to establish law governing oil spill prevention and response. (EPA 2013a)

ON-SCENE COORDINATOR (OSC): The On-Scene Coordinator (OSC) is the federal official responsible for monitoring or directing responses to all oil spills and hazardous substance releases reported to the federal government. The OSC coordinates all federal efforts with, and provides support and information to, local, state and regional response communities. The OSC is an agent of either EPA or the U.S. Coast Guard, depending on where the incident occurs. EPA OSCs have primary responsibility for spills and releases to inland areas and waters, while U.S. Coast Guard OSCs have responsibility for coastal waters and the Great Lakes. In general, the OSC has the following key responsibilities during and after a response to a hazardous substance release or an oil spill: (1) assessment; (2) monitoring; (3) response assistance; and (4) evaluation. (EPA 2013a)

OPERATIONAL PERIOD: The period of time scheduled for execution of a given set of operation actions as specified in the Incident Action Plan. Operational Periods can be of various lengths, although usually not over 24 hours. (FEMA 2008b)

OPERATIONS SECTION: The Section responsible for all tactical operations at the incident. Includes Branches, Divisions and/or Groups, Task Forces, Strike Teams, Single Resources, and Staging Areas. (FEMA 2008b)

PERSONAL PROTECTIVE EQUIPMENT (PPE): Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to a variety of hazards. Examples of PPE include such items as gloves, foot and eye protection, protective hearing devices (earplugs, muffs) hard hats, respirators and full body suits. (OSHA 2013c)

OPERATIONAL PERIOD: The period of time scheduled for execution of a given set of operation actions as specified in the Incident Action Plan. Operational Periods can be of various lengths, although usually not over 24 hours. (FEMA Undated)

OPERATIONS SECTION: The Section responsible for all tactical operations at the incident. Includes Branches, Divisions and/or Groups, Task Forces, Strike Teams, Single Resources, and Staging Areas. (FEMA Undated)

PLANNING MEETING: A meeting held as needed throughout the duration of an incident, to select specific strategies and tactics for incident control operations, and for service and support planning. On larger incidents, the Planning Meeting is a major element in the development of the Incident Action Plan. (FEMA Undated)

PLANNING SECTION: Responsible for the collection, evaluation, and dissemination of information related to the incident, and for the preparation and documentation of Incident Action Plans. The Section also maintains information on the current and forecasted situation, and on the status of resources assigned to the incident. Includes the Situation, Resources, Documentation, and Demobilization Units, as well as Technical Specialists (FEMA Undated)

PRELIMINARY DAMAGE ASSESSMENT (PDA): Following a disaster, a Governor requests PDAs as the first step in the declaration process. Federal representatives, including the U.S. Small Business Administration, join state, tribal, and local officials to form “PDA teams.” PDA teams are responsible for surveying damages in designated counties, and they do this by going city-by-city, street-by-street, door-to-door, until *impacted* areas identified by state, tribal, and local officials have been thoroughly assessed. Along with assessing the damages that affected individuals within a community, PDA teams consisting of state, federal, tribal and local officials will also assess the impact of the incident on public infrastructure. This includes the cost of emergency measures, such as debris removal, and repair or restoration of public facilities such as roads and buildings. (FEMA 2012a)

PREPAREDNESS: The range of deliberate, critical tasks and activities necessary to build, sustain, and improve the operational capability to prevent, protect against, respond to, and recover from domestic incidents. Preparedness is a continuous process. Preparedness involves efforts at all levels of government and between government and private-sector and nongovernmental organizations to identify threats, determine vulnerabilities, and identify required resources. Within the NIMS, preparedness is operationally focused on establishing guidelines, protocols, and standards for planning, training and exercises, personnel qualification and certification, equipment certification, and publication management. (FEMA Undated)

PREVENTION: The capabilities necessary to avoid, prevent, or stop a threatened or actual act of terrorism. As defined by Presidential Policy Directive 8, the term "prevention" refers to preventing imminent threats. (FEMA 2013d)

PROCUREMENT UNIT: Functional unit within the Finance/Administration Section responsible for financial matters involving vendor contracts. (ICS Undated)

PROTECTION: The capabilities necessary to secure the homeland against acts of terrorism and manmade or natural disasters. (FEMA 2013d)

RECOVERY: The development, coordination, and execution of service- and site-restoration plans; the reconstitution of government operations and services; individual, private-sector, nongovernmental, and public-assistance programs to provide housing and to promote restoration; long-term care and treatment of affected persons; additional measures for social, political, environmental, and economic restoration; evaluation of the incident to identify lessons learned; post incident reporting; and development of initiatives to mitigate the effects of future incidents. (FEMA Undated)

REGIONAL CONTINGENCY PLAN (RCP): The Regional Response Teams (RRTs), working with the states, shall develop federal RCPs for each standard federal region, Alaska, Oceania in the Pacific, and the Caribbean to coordinate timely, effective response by various federal agencies and other organizations to discharges of oil or releases of hazardous substances, pollutants, or contaminants. RCPs shall, as appropriate, include information on all useful facilities and resources in the region, from government, commercial, academic, and other sources. To the greatest extent possible, RCPs shall follow the format of the NCP and be coordinated with state emergency response plans, Area Cleanup Plans (ACPs). Such coordination should be accomplished by working with the State Emergency Response Commissions (SERCs) in the region covered by the RCP. RCPs shall contain lines of demarcation between the inland and coastal zones, as mutually agreed upon by USCG and EPA. (Cornell 2013)

REGIONAL RESPONSE TEAM (RRT): There are thirteen RRTs in the U.S., each representing a particular geographic region (including the Caribbean and the Pacific Basin). RRTs are composed of representatives from field offices of the federal agencies that make up the National Response Team, as well as state representatives. The four major responsibilities of RRTs are: (1) response; (2) planning; (3) training; and (4) coordination. (EPA 2013a)

RESOURCES: Personnel and major items of equipment, supplies, and facilities available or potentially available for assignment to incident operations and for which status is maintained. Resources are described by kind and type and may be used in operational support or supervisory capacities at an incident or at an EOC. (FEMA Undated)

RESOURCES UNIT: Functional unit within the Planning Section responsible for recording the status of resources committed to the incident. The Unit also evaluates resources currently committed to the incident, the impact that additional responding resources will have on the incident, and anticipated resource needs. (ICS Undated)

RESPONSE: The capabilities necessary to save lives, protect property and the environment, and meet basic human needs after an incident has occurred. (FEMA 2013d)

SAFETY OFFICER: A member of the Command Staff responsible for monitoring and assessing safety hazards or unsafe situations, and for developing measures for ensuring personnel safety. The Safety Officer may have assistants. (ICS Undated)

SCIENTIFIC SUPPORT COORDINATOR (SSC): OR&R's Emergency Response Division (ERD) consists of an interdisciplinary scientific team that responds to oil and chemical spills in U.S. waters and helps the On-Scene Coordinator make timely operational decisions. The team is headquartered at NOAA's campus in Seattle; however ERD's Scientific Support Coordinators (SSCs), located around the country, lead the team at spills, drawing on the team's spill trajectory estimates, chemical hazards analyses, and assessments of the sensitivity of biological and human-use resources. OR&R staff members also represent NOAA and the DOC on the National Response Team and Regional Response Teams. (NOAA 2013b)

SECTION: That organization level with responsibility for a major functional area of the incident, e.g., Operations, Planning, Logistics, Finance/Administration. The Section is organizationally between Branch and Incident Commander. (ICS Undated)

SEMINAR: A seminar is a type of HSEEP exercise. It is an informal discussion, designed to orient participants to new or updated plans, policies, or procedures (e.g., a seminar to review a new Evacuation Standard Operating Procedure). (FEMA 2013a).

SHELTER-IN-PLACE: Selecting an interior room or rooms within your facility, or ones with no or few windows, and taking refuge there. In many cases, local authorities will issue advice to shelter-in-place via TV or radio. (OSH, 2013a)

SHORELINE CLEAN-UP AND ASSESSMENT TEAM (SCAT): SCAT teams include people trained in the techniques, procedures, and terminology of shoreline assessment. Teams should include people with knowledge and experience in oil and oil cleanup techniques, geomorphology, ecology, and in some cases, archeology. Members of a SCAT team may include federal representatives (usually from the NOAA Scientific Support Team or U.S. Coast Guard), state representatives, a representative of the responsible party, and possibly the landowner or other stakeholders. A SCAT coordinator directs the activities of the SCAT teams from the command post and coordinates with people working on other aspects of the response. (NOAA 2013b)

SINGLE RESOURCE: An individual, a piece of equipment and its personnel complement, or a crew or team of individuals with an identified work Supervisor that can be used on an incident. (FEMA Undated)

SITUATION UNIT: Functional unit within the Planning Section responsible for the collection, organization, and analysis of incident status information, and for analysis of the situation as it progresses. Reports to the Planning Section Chief. (ICS Undated)

SPAN OF CONTROL: The supervisory ratio of from three-to-seven individuals, with five-to-one being established as optimum. (ICS Undated)

STAFFORD ACT: The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) was enacted to support state and local governments and their citizens when their resources are overwhelmed by the effects of a disaster. The law establishes the process for requesting and obtaining a Presidential disaster declaration, defines the type and scope of assistance available under the Stafford Act, and sets the conditions for obtaining assistance. (EPA 2013c)

STAGING AREA: Staging Areas are locations set up at an incident where resources can be placed while awaiting a tactical assignment. Staging Areas are managed by the Operations Section. (ICS Undated)

STANDARD OPERATING PROCEDURES (SOP): A complete reference document that details the procedures for performing a single function or a number of interdependent functions. (FEMA 2007)

STATE WARNING POINT (SWP): A Warning Point is a facility with the responsibility for receipt of warnings and other emergency information over the National Warning System (NAWAS) and disseminating it in accordance with State and local emergency preparedness plans. Each State has a Primary and Alternate SWP. The primary SWP is staffed 24 hours a day, and exercises operational control over NAWAS within the State. The Alternate SWP is generally located in the State EOC. (FEMA 2001)

STATE WATCH OFFICE (SWO): Provides efficient and effective communications during normal periods as well as pre-and-post disaster periods and serves as the contact point in some states for communications between local Governments and Emergency Agencies, State Government Agencies and the Federal Government. (Florida Disaster 2013)

STRATEGY: The general plan or direction selected to accomplish incident objectives. (ICS Undated)

SUPERVISOR: The ICS title for individuals responsible for command of a Division or Group. (ICS Undated)

TABLETOP EXERCISE (TTX): A tabletop exercise is a type of HSEEP exercise. It involves key personnel discussing simulated scenarios in an informal setting. TTXs can be used to assess plans, policies, and procedures. (FEMA 2013a)

TACTICAL DIRECTION: Direction given by the Operations Section Chief which includes the tactics appropriate for the selected strategy, the selection and assignment of resources, tactics implementation, and performance monitoring for each operational period. (ICS Undated)

TASK FORCE: A combination of single resources assembled for a particular tactical need, with common communications and a leader. (ICS Undated)

TECHNICAL SPECIALISTS: Personnel with special skills that can be used anywhere within the ICS organization. (FEMA Undated)

THREAT AND HAZARD IDENTIFICATION AND RISK ASSESSMENT (THIRA): A comprehensive approach developed by FEMA for identifying and assessing risks and associated impacts to communities. The approach includes assessing the threats and

hazards facing a community of any size, assessing the vulnerability of a community to those hazards, estimating the consequences of the hazards, and establishing capability targets to address the overall community risk. (FEMA2012b)

THREATENED SPECIES: The term "threatened species" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range - - as defined in the Endangered Species Act. (FWS 2013a)

TIME UNIT: Functional unit within the Finance/Administration Section responsible for recording time for incident personnel and hired equipment. (ICS Undated)

UNIFIED COMMAND: An application of ICS used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the Unified Command, often the senior person from agencies and/or disciplines participating in the Unified Command, to establish a common set of objectives and strategies and a single Incident Action Plan. (FEMA Undated)**UNIT:** The organizational element having functional responsibility for a specific incident planning, logistics, or finance/administration activity. (ICS Undated)

UNITY OF COMMAND: The concept by which each person within an organization reports to one and only one designated person. The purpose of unity of command is to ensure unity of effort under one responsible commander for every objective. (FEMA Undated)

WORKSHOP A workshop is a type of HSEEP exercise. It resembles a seminar but is employed to build specific products, such as a draft plan or policy (e.g., a Training and Exercise Plan Workshop is used to develop a Multi-Year Training and Exercise Plan). (FEMA 2013a)

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